Vol. 1148 Number 2

OFFICIAL GAZETTE

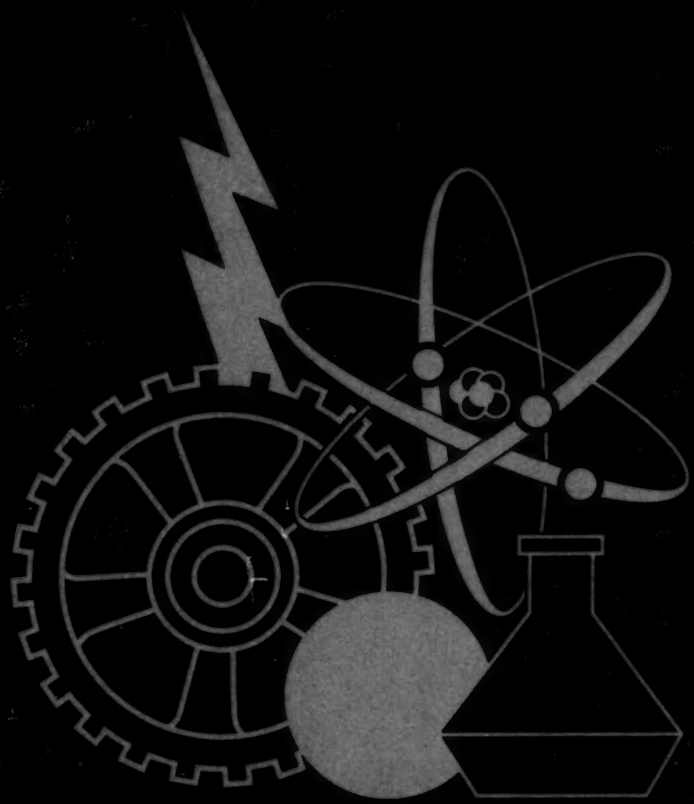
of the

UNITED STATES PATENT AND TRADEMARK OFFICE

ute to:

PATENTS

March 9, 1993



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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1142 O.G. 66, on Sept. 29, 1992.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed on Oct. 1, 1992, due to changes both in the amount of the international search fee charged by the European Patent Office and in the exchange rate of the U.S. dollar to the German mark, and was announced in the *Official Gazette* at 1142 O.G. 20, on Sept. 8, 1992.

International fees, effective on Dec. 1, 1992, due to changes in the exchange rate of the U.S. dollar with regard to the Swiss franc, were announced in the *Official Gazette* at 1143 O.G. 62, on Oct. 27, 1992.

Certain domestic PCT fees and charges for International Search and Preliminary Examination have been changed effective Oct. 1, 1992 and were announced in the *Official Gazette* at 1141 O.G. 68 on Aug. 25, 1992.

The current schedule of PCT fees (in U.S. dollars) is as follows:

Transmittal fee:	200.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	620.00
—Corresponding prior U.S. national application filed	410.00
—Supplemental search fee, per additional invention	170.00
European Patent Office as ISA	1635.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—Search fee paid to USPTO as ISA	450.00
—Additional examination fee, per additional invention	140.00
—ISA not the USPTO	670.00
—Additional examination fee, per additional invention	230.00
International fees	
Basic fee	593.00
Basic Supplemental fee (for each page over 30)	12.00
Designation fee per country or region for the first 10 national or regional offices	144.00
Designation fee for 11th and subsequent designations	No Charge
Handling fee	181.00

U.S. National Stage fees	Small Entity	Regular
USPTO was IPEA	320.00	640.00
USPTO was ISA but not IPEA	355.00	710.00
USPTO was neither ISA nor IPEA	475.00	950.00
Filing with an EPO or JPO search report	415.00	830.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(2) to (4)	45.00	90.00
—For each independent claim in excess of 3	37.00	74.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	115.00	230.00
—Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Nov. 8, 1992

DOUGLAS B. COMER,
Acting Assistant Secretary and Acting Commissioner of Patents and Trademarks.

Patent Cooperation Treaty Update

The International Bureau of the World Intellectual Property Organization has informed the U.S. Patent and Trademark Office that, due to changes in the exchange rates of the U.S. dollar with regard to the Swiss franc and the German mark, the dollar amount of the international fees for international applications filed in the United States Receiving Office will decrease, effective May 1, 1993.

Effective May 1, 1993, the amount of the international fees for international applications filed in the United States Receiving Office will be:

Basic Fee (first 30 pages)	$530.00
Basic supplemental fee (for each page over 30)	$10.00
Designation fee (per country or region up to 10)	$128.00
Handling fee	$162.00
European Patent Office (EPO) search fee (EPO as International Searching Authority)	$1512.00

Feb. 11, 1993

DOUGLAS B. COMER
Acting Assistant Secretary and Acting Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d) provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not

paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on March 6, 1990 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,905,320 through 4,907,294
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on March 4, 1986 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,573,216 through 4,574,395
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after December 12, 1980, but before August 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months and seven years and six months and eleven years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1992, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 , in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9f) $465.00
By other than a small entity $930.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9f) $935.00
By other than a small entity $1,870.00

(g) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity(§ 1.9(f)) $1,410.00
By other than a small entity $2,820.00

The amounts of the surcharges for paying the maintenance fee during the grace period or after the expiration of the patent are set forth in 37 CFR 1.20(h), and (i), which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months , seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980

By a small entity (§ 1.9f) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been

(1) unavoidable $620.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED DECEMBER 27, 1992 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,658	06/816,499	5/03/88
(4,489,829)	(06/477,151)	(12/25/84)
4,489,443	06/523,713	12/25/84
4,489,446	06/398,084	12/25/84
4,489,447	06/426,101	12/25/84
4,489,448	06/493,283	12/25/84
4,489,451	06/422,074	12/25/84
4,489,453	06/384,373	12/25/84
4,489,454	06/394,776	12/25/84
4,489,456	06/422,902	12/25/84
4,489,458	06/537,171	12/25/84
4,489,460	06/481,031	12/25/84
4,489,464	06/396,071	12/25/84
4,489,465	06/498,725	12/25/84
4,489,467	06/368,733	12/25/84
4,489,476	06/497,931	12/25/84
4,489,487	06/344,410	12/25/84
4,489,490	06/380,220	12/25/84
4,489,492	06/383,864	12/25/84
4,489,494	06/344,199	12/25/84
4,489,495	06/422,877	12/25/84
4,489,502	06/438,973	12/25/84
4,489,504	06/345,203	12/25/84
4,489,508	06/417,729	12/25/84
4,489,510	06/414,943	12/25/84
4,489,511	06/354,871	12/25/84
4,489,512	06/429,174	12/25/84
4,489,514	06/409,448	12/25/84
4,489,515	06/477,263	12/25/84
4,489,517	06/431,267	12/25/84
4,489,520	06/288,657	12/25/84
4,489,521	06/388,747	12/25/84
4,489,523	06/553,602	12/25/84
4,489,526	06/473,237	12/25/84
4,489,528	06/409,321	12/25/84
4,489,531	06/451,992	12/25/84
4,489,533	06/446,911	12/25/84
4,489,537	06/400,611	12/25/84
4,489,538	06/352,743	12/25/84
4,489,539	06/508,402	12/25/84
4,489,541	06/505,698	12/25/84
4,489,542	06/452,720	12/25/84
4,489,544	06/521,110	12/25/84
4,489,546	06/495,813	12/25/84
4,489,547	06/400,606	12/25/84
4,489,548	06/392,771	12/25/84
4,489,549	06/524,047	12/25/84
4,489,550	06/458,063	12/25/84
4,489,559	06/401,264	12/25/84
4,489,560	06/401,265	12/25/84
4,489,561	06/428,651	12/25/84
4,489,564	06/488,264	12/25/84
4,489,568	06/599,601	12/25/84
4,489,571	06/565,856	12/25/84
4,489,576	06/589,349	12/25/84
4,489,577	06/448,686	12/25/84
4,489,579	06/475,694	12/25/84
4,489,581	06/459,610	12/25/84
4,489,584	06/446,313	12/25/84
4,489,586	06/241,689	12/25/84
4,489,587	06/474,935	12/25/84
4,489,588	06/480,463	12/25/84

Patent Number	Serial Number	Issue Date
4,489,589	06/392,966	12/25/84
4,489,590	06/342,048	12/25/84
4,489,591	06/429,874	12/25/84
4,489,592	06/468,787	12/25/84
4,489,593	06/416,164	12/25/84
4,489,595	06/479,170	12/25/84
4,489,597	06/512,024	12/25/84
4,489,599	06/474,049	12/25/84
4,489,600	06/471,851	12/25/84
4,489,602	06/440,402	12/25/84
4,489,603	06/415,546	12/25/84
4,489,604	06/406,371	12/25/84
4,489,605	06/453,600	12/25/84
4,489,607	06/497,043	12/25/84
4,489,610	06/599,152	12/25/84
4,489,611	06/459,391	12/25/84
4,489,618	06/351,569	12/25/84
4,489,619	06/415,045	12/25/84
4,489,621	06/425,734	12/25/84
4,489,622	06/425,735	12/25/84
4,489,624	06/362,646	12/25/84
4,489,625	06/443,994	12/25/84
4,489,627	06/342,278	12/25/84
4,489,628	06/405,392	12/25/84
4,489,632	06/402,167	12/25/84
4,489,633	06/304,654	12/25/84
4,489,634	06/402,739	12/25/84
4,489,641	06/232,746	12/25/84
4,489,643	06/226,737	12/25/84
4,489,648	06/571,772	12/25/84
4,489,649	06/547,127	12/25/84
4,489,655	06/456,098	12/25/84
4,489,656	06/468,422	12/25/84
4,489,657	06/347,685	12/25/84
4,489,661	06/367,596	12/25/84
4,489,665	06/590,119	12/25/84
4,489,666	06/590,144	12/25/84
4,489,670	06/495,047	12/25/84
4,489,672	06/222,333	12/25/84
4,489,673	06/492,024	12/25/84
4,489,674	06/238,101	12/25/84
4,489,675	06/339,866	12/25/84
4,489,676	06/550,830	12/25/84
4,489,678	06/486,232	12/25/84
4,489,680	06/573,188	12/25/84
4,489,681	06/326,902	12/25/84
4,489,682	06/301,039	12/25/84
4,489,683	06/373,350	12/25/84
4,489,684	06/372,242	12/25/84
4,489,693	06/550,078	12/25/84
4,489,695	06/343,365	12/25/84
4,489,699	06/376,399	12/25/84
4,489,700	06/420,974	12/25/84
4,489,701	06/616,798	12/25/84
4,489,702	06/424,205	12/25/84
4,489,703	06/451,243	12/25/84
4,489,708	06/484,601	12/25/84
4,489,709	06/483,196	12/25/84
4,489,714	06/456,511	12/25/84
4,489,715	06/408,225	12/25/84
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4,489,734	06/582,347	12/25/84
4,489,736	06/444,226	12/25/84
4,489,737	06/335,655	12/25/84
4,489,738	06/472,955	12/25/84
4,489,743	06/403,285	12/25/84
4,489,744	06/425,142	12/25/84
4,489,746	06/383,305	12/25/84
4,489,747	06/375,392	12/25/84
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4,489,754	06/426,780	12/25/84
4,489,758	06/446,983	12/25/84
4,489,760	06/523,103	12/25/84
4,489,761	06/495,484	12/25/84
4,489,766	06/426,760	12/25/84
4,489,767	06/383,319	12/25/84
4,489,770	06/483,490	12/25/84
4,489,776	06/516,696	12/25/84
4,489,777	06/341,360	12/25/84
4,489,780	06/529,561	12/25/84
4,489,781	06/507,889	12/25/84
4,489,782	06/560,697	12/25/84
4,489,784	06/463,224	12/25/84
4,489,787	06/441,679	12/25/84
4,489,788	06/462,445	12/25/84
4,489,789	06/383,967	12/25/84
4,489,790	06/450,077	12/25/84
4,489,791	06/394,829	12/25/84
4,489,792	06/268,053	12/25/84
4,489,793	06/376,340	12/25/84
4,489,797	06/464,657	12/25/84
4,489,804	06/457,129	12/25/84
4,489,806	06/489,148	12/25/84
4,489,808	06/544,521	12/25/84
4,489,809	06/455,290	12/25/84
4,489,810	06/524,490	12/25/84
4,489,813	06/345,115	12/25/84
4,489,814	06/404,120	12/25/84
4,489,816	06/364,424	12/25/84
4,489,819	06/236,469	12/25/84
4,489,821	06/390,658	12/25/84
4,489,822	06/459,177	12/25/84
4,489,826	06/346,017	12/25/84
4,489,827	06/519,470	12/25/84
4,489,831	06/589,891	12/25/84
4,489,832	06/511,858	12/25/84
4,489,833	06/400,297	12/25/84
4,489,834	06/627,219	12/25/84
4,489,836	06/338,869	12/25/84
4,489,840	06/519,801	12/25/84
4,489,842	06/525,547	12/25/84
4,489,843	06/476,147	12/25/84
4,489,844	06/449,798	12/25/84
4,489,845	06/491,209	12/25/84
4,489,847	06/224,582	12/25/84
4,489,848	06/372,647	12/25/84
4,489,851	06/503,669	12/25/84
4,489,854	06/401,553	12/25/84
4,489,855	06/412,148	12/25/84
4,489,859	06/437,875	12/25/84
4,489,860	06/389,013	12/25/84
4,489,862	06/341,910	12/25/84
4,489,864	06/489,260	12/25/84
4,489,865	06/561,948	12/25/84
4,489,866	06/552,109	12/25/84
4,489,868	06/569,386	12/25/84
4,489,869	06/465,547	12/25/84
4,489,872	06/406,355	12/25/84
4,489,874	06/417,151	12/25/84
4,489,876	06/481,142	12/25/84
4,489,877	06/446,734	12/25/84
4,489,878	06/457,870	12/25/84
4,489,879	06/498,137	12/25/84
4,489,881	06/575,458	12/25/84
4,489,883	06/571,940	12/25/84
4,489,885	06/404,101	12/25/84
4,489,892	06/591,420	12/25/84
4,489,893	06/498,363	12/25/84
4,489,897	06/471,309	12/25/84
4,489,899	06/489,346	12/25/84
4,489,903	06/435,402	12/25/84
4,489,904	06/472,113	12/25/84
4,489,905	06/307,286	12/25/84
4,489,906	06/525,810	12/25/84
4,489,907	06/391,459	12/25/84
4,489,911	06/468,142	12/25/84
4,489,912	06/247,804	12/25/84
4,489,914	06/269,728	12/25/84
4,489,915	06/417,527	12/25/84
4,489,923	06/520,820	12/25/84
4,489,926	06/415,972	12/25/84
4,489,928	06/418,683	12/25/84

Patent Number	Serial Number	Issue Date
4,489,929	06/412,909	12/25/84
4,489,932	06/435,944	12/25/84
4,489,935	06/468,049	12/25/84
4,489,937	06/407,745	12/25/84
4,489,938	06/506,016	12/25/84
4,489,940	06/428,154	12/25/84
4,489,941	06/420,661	12/25/84
4,489,943	06/457,758	12/25/84
4,489,944	06/530,711	12/25/84
4,489,946	06/428,487	12/25/84
4,489,947	06/513,341	12/25/84
4,489,948	06/555,813	12/25/84
4,489,949	06/548,442	12/25/84
4,489,950	06/497,856	12/25/84
4,489,955	06/447,987	12/25/84
4,489,956	06/347,099	12/25/84
4,489,959	06/360,161	12/25/84
4,489,961	06/485,761	12/25/84
4,489,962	06/421,821	12/25/84
4,489,965	06/443,380	12/25/84
4,489,968	06/303,781	12/25/84
4,489,969	06/428,723	12/25/84
4,489,971	06/465,627	12/25/84
4,489,972	06/366,201	12/25/84
4,489,974	06/423,677	12/25/84
4,489,975	06/416,388	12/25/84
4,489,977	06/390,265	12/25/84
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4,489,981	06/462,342	12/25/84
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4,793,382	07/133,753	12/27/88
4,793,383	07/110,089	12/27/88
4,793,387	07/093,917	12/27/88
4,793,389	07/096,151	12/27/88
4,793,392	07/151,951	12/27/88
4,793,394	07/151,218	12/27/88
4,793,396	06/908,412	12/27/88
4,793,405	06/941,150	12/27/88
4,793,406	07/093,823	12/27/88
4,793,409	07/064,063	12/27/88
4,793,413	07/135,873	12/27/88
4,793,422	07/168,833	12/27/88
4,793,426	06/935,428	12/27/88
4,793,429	07/184,308	12/27/88
4,793,436	06/938,389	12/27/88
4,793,439	07/142,181	12/27/88
4,793,444	07/070,529	12/27/88
4,793,445	07/104,816	12/27/88

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4,793,452	07/065,448	12/27/88
4,793,459	07/037,154	12/27/88
4,793,470	06/885,215	12/27/88
4,793,471	07/036,109	12/27/88
4,793,472	07/064,942	12/27/88
4,793,474	06/354,442	12/27/88
4,793,481	07/197,425	12/27/88
4,793,483	07/186,629	12/27/88
4,793,487	06/914,930	12/27/88
4,793,489	07/011,023	12/27/88
4,793,490	06/674,490	12/27/88
4,793,499	07/120,633	12/27/88
4,793,500	07/119,389	12/27/88
4,793,510	07/073,080	12/27/88
4,793,523	06/878,873	12/27/88
4,793,524	06/259,004	12/27/88
4,793,525	07/167,704	12/27/88
4,793,526	07/055,987	12/27/88
4,793,527	07/098,395	12/27/88
4,793,532	07/083,440	12/27/88
4,793,538	07/133,149	12/27/88
4,793,541	07/099,246	12/27/88
4,793,543	07/091,054	12/27/88
4,793,546	07/114,953	12/27/88
4,793,550	07/115,390	12/27/88
4,793,551	07/166,406	12/27/88
4,793,552	07/157,251	12/27/88
4,793,554	07/190,684	12/27/88
4,793,557	06/610,375	12/27/88
4,793,559	07/137,970	12/27/88
4,793,564	07/067,227	12/27/88
4,793,571	07/069,434	12/27/88
4,793,587	07/092,531	12/27/88
4,793,592	07/094,836	12/27/88
4,793,601	06/530,881	12/27/88
4,793,607	06/862,964	12/27/88
4,793,615	07/100,908	12/27/88
4,793,619	06/849,462	12/27/88
4,793,620	07/129,808	12/27/88
4,793,621	07/129,604	12/27/88
4,793,625	07/124,252	12/27/88
4,793,626	07/039,217	12/27/88
4,793,627	07/171,013	12/27/88
4,793,633	07/080,675	12/27/88
4,793,634	06/944,956	12/27/88
4,793,638	07/205,205	12/27/88
4,793,639	07/188,015	12/27/88
4,793,642	07/031,026	12/27/88
4,793,645	07/152,975	12/27/88
4,793,647	07/115,523	12/27/88
4,793,648	07/163,005	12/27/88
4,793,652	07/084,442	12/27/88
4,793,658	07/091,098	12/27/88
4,793,664	06/545,452	12/27/88
4,793,665	07/034,012	12/27/88
4,793,666	07/137,708	12/27/88
4,793,670	06/882,545	12/27/88
4,793,671	07/100,348	12/27/88
4,793,673	06/866,918	12/27/88
4,793,674	07/004,354	12/27/88
4,793,714	07/016,149	12/27/88
4,793,722	06/640,893	12/27/88
4,793,724	06/897,256	12/27/88
4,793,731	07/080,783	12/27/88
4,793,732	07/146,656	12/27/88
4,793,743	07/044,049	12/27/88
4,793,755	06/476,785	12/27/88
4,793,756	06/918,776	12/27/88
4,793,761	07/023,141	12/27/88
4,793,768	06/813,998	12/27/88
4,793,779	07/035,501	12/27/88
4,793,781	07/060,656	12/27/88
4,793,782	06/942,739	12/27/88
4,793,786	06/928,152	12/27/88
4,793,794	06/909,841	12/27/88
4,793,796	06/909,843	12/27/88
4,793,805	06/900,373	12/27/88
4,793,806	07/043,744	12/27/88
4,793,807	07/063,646	12/27/88
4,793,811	07/062,009	12/27/88
4,793,818	07/110,867	12/27/88
4,793,822	07/164,943	12/27/88
4,793,823	07/113,946	12/27/88
4,793,824	07/100,378	12/27/88
4,793,825	06/774,691	12/27/88
4,793,835	07/170,838	12/27/88
4,793,836	07/177,422	12/27/88
4,793,841	07/070,677	12/27/88
4,793,845	07/113,690	12/27/88
4,793,848	07/094,343	12/27/88
4,793,856	07/094,335	12/27/88
4,793,872	07/021,684	12/27/88
4,793,887	07/057,567	12/27/88
4,793,888	06/884,443	12/27/88
4,793,913	06/813,152	12/27/88
4,793,917	07/034,440	12/27/88
4,793,936	06/518,882	12/27/88
4,793,938	06/932,202	12/27/88
4,793,946	06/915,363	12/27/88
4,793,948	07/007,663	12/27/88
4,793,955	06/497,538	12/27/88
4,793,958	06/942,038	12/27/88
4,793,964	07/051,836	12/27/88
4,793,965	06/926,295	12/27/88
4,793,966	07/178,801	12/27/88
4,793,968	06/624,924	12/27/88
4,793,974	07/023,771	12/27/88
4,793,977	07/036,354	12/27/88
4,793,979	06/841,853	12/27/88
4,793,999	07/030,559	12/27/88
4,794,009	07/038,003	12/27/88
4,794,013	07/071,373	12/27/88
4,794,018	07/082,741	12/27/88
4,794,022	07/060,353	12/27/88
4,794,024	07/088,041	12/27/88
4,794,025	07/130,319	12/27/88
4,794,026	06/737,846	12/27/88
4,794,029	07/018,358	12/27/88
4,794,041	06/534,229	12/27/88
4,794,046	07/062,660	12/27/88
4,794,063	06/921,600	12/27/88
4,794,075	06/770,841	12/27/88
4,794,076	06/779,212	12/27/88
4,794,077	06/808,913	12/27/88
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4,794,088	06/908,793	12/27/88
4,794,095	07/069,553	12/27/88
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4,794,109	07/003,118	12/27/88
4,794,113	07/000,203	12/27/88
4,794,119	06/844,642	12/27/88
4,794,120	07/070,541	12/27/88
4,794,121	06/908,680	12/27/88
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4,794,140	07/126,403	12/27/88
4,794,142	07/083,230	12/27/88
4,794,149	07/093,172	12/27/88
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4,794,177	06/809,929	12/27/88
4,794,186	06/681,252	12/27/88
4,794,189	07/129,493	12/27/88
4,794,194	06/888,540	12/27/88
4,794,213	07/173,218	12/27/88
4,794,216	06/860,134	12/27/88
4,794,228	06/900,282	12/27/88
4,794,230	06/580,983	12/27/88
4,794,232	06/908,279	12/27/88
4,794,240	06/907,339	12/27/88
4,794,245	07/021,214	12/27/88
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4,794,301	07/086,519	12/27/88
4,794,318	07/101,019	12/27/88
4,794,321	07/126,013	12/27/88
4,794,323	06/846,630	12/27/88
4,794,326	06/582,968	12/27/88
4,794,330	07/010,423	12/27/88
4,794,337	07/013,319	12/27/88
4,794,350	06/220,931	12/27/88
4,794,359	07/144,146	12/27/88
4,794,360	07/092,836	12/27/88
4,794,365	06/914,701	12/27/88
4,794,367	06/943,028	12/27/88
4,794,370	06/854,821	12/27/88
4,794,372	07/088,561	12/27/88
4,794,373	06/900,826	12/27/88
4,794,377	06/863,057	12/27/88
4,794,378	07/137,328	12/27/88
4,794,380	07/078,301	12/27/88
4,794,388	06/348,518	12/27/88
4,794,390	06/842,420	12/27/88
4,794,393	07/180,593	12/27/88
4,794,399	06/892,372	12/27/88
4,794,406	07/075,430	12/27/88
4,794,408	07/075,531	12/27/88
4,794,414	07/116,644	12/27/88
4,794,415	07/039,733	12/27/88
4,794,426	07/123,335	12/27/88
4,794,428	07/158,565	12/27/88
4,794,430	07/044,007	12/27/88
4,794,431	06/854,425	12/27/88
4,794,435	06/802,825	12/27/88
4,794,449	06/914,047	12/27/88
4,794,496	07/079,499	12/27/88
4,794,523	06/782,664	12/27/88
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4,794,547	06/896,869	12/27/88
4,794,549	06/910,914	12/27/88
4,794,552	06/793,263	12/27/88
4,794,566	07/013,233	12/27/88
4,794,577	07/039,857	12/27/88
4,794,578	07/033,538	12/27/88
4,794,580	06/900,207	12/27/88
4,794,587	07/140,719	12/27/88
4,794,596	07/006,679	12/27/88
4,794,599	06/896,756	12/27/88
4,794,610	07/013,436	12/27/88
4,794,616	06/815,326	12/27/88
4,794,617	06/906,503	12/27/88
4,794,622	07/196,882	12/27/88
4,794,624	06/938,955	12/27/88
4,794,628	07/110,726	12/27/88
4,794,634	06/896,009	12/27/88
4,794,636	06/756,144	12/27/88

NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE (35 U.S.C. 41(c); 37 CFR 1.378)

The patent(s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,742,277	07/079,049	5/03/88	7/29/87	1/13/93
4,749,905	06/930,416	6/07/88	11/14/86	1/13/93
4,778,683	06/937,997	10/18/88	12/04/86	1/13/93
4,676,790	06/779,808	6/30/87	9/25/85	1/19/93

Reissue Applications Filed

Notice under 37 CFR 1.11 (b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21 (b)).

4,411,273, Re. S.N. 07/926,334, Filed Aug. 6, 1992, Cl. 128/731, SYSTEM AND METHOD FOR ELECTRODE PAIR DERIVATIONS IN ELECTROENCEPHALOGRAPHY, E. Roy John, Owner of Record: *New York Medical College*, Attorney or Agent: Eliot S. Gerber, Ex. Gp.: 3309

4,631,267, Re. S.N. 08/002,221, Filed Jan. 8, 1993, Cl. 502/439, METHOD OF PRODUCING HIGH-STRENGTH HIGH SURFACE AREA CATALYST SUPPORTS, Irwin M. Lachman, et. al., Owner of Record: *Corning Glass Works, Corning, N.Y.*, Attorney or Agent: Angela N. Nwaneri, Ex. Gp.: 1106

4,801,762, Re. S.N. 08/006,421, Filed Jan. 19, 1993, Cl. 585/500, METHANE CONVERSION PROCESS, David W. Leyshon, Owner of Record: *Atlantic Richfield Co., Los Angeles, Calif.*, Attorney or Agent: Roderick W. MacDonald, Ex. Gp.: 1106

4,984,881, Re. S.N. 08/003,568, Filed Jan. 13, 1993, Cl. 359/198, ROTATION SUPPORTING DEVICE OF A POLYGON MIRROR, Horiyuki Osada, et. al., Owner of Record: *EB ARA Corp., Tokyo Japan*, Attorney or Agent: V.M. Creedon, Ex. Gp.: 2507

4,985,766, Re. S.N. 08/004,082, Filed Jan. 13, 1993, Cl. 358/133, VIDEO CODER, David G. Morrison, et. al., Owner of Record: *British Telecommunications Public Ltd., Co., London, England*, Attorney or Agent: Paul J. Henon, Ex. Gp.: 2615

5,014,810, Re. S.N. 07/999,030, Filed Dec. 31, 1992, Cl. 180/268, METHOD FOR CONTROLLING THE RELEASE OF PASSENGER RESTRAINT SYSTEMS, Bernhard Mattes, et. al., Owner of Record: *Robert Bosch GmbH, Stuttgart, Federal Republic of Germany*, Attorney or Agent: Richard L. Mayer, Ex. Gp.: 3106

5,015,581, Re. S.N. 08/003,277, Filed Jan. 12, 1993, Cl. 435/172.3, METHOD FOR PRODUCING THE HINCII RESTRICTION ENCLONUCLEASE AND METHYLASE, Jack S. Benner, et. al., Owner of Record: *New England Biolabs, Inc., Boston, Mass.*, Attorney or Agent: Gregory O. Williams, Ex. Gp.: 1804

5,061,213, Re. S.N. 08/005,153, Filed Jan. 15, 1993, Cl. 440/63, CONTROL CABLE HOUSING SEAL AND LUBRICANT FOR MARINE STEERING SYSTEM, Thomas C. Burroughs, Owner of Record: *Inventor*, Attorney or Agent: Eugene N. Riddle, Ex. Gp.: 3105

5,100,380, Re. S.N. 08/004,138, Filed Jan. 13, 1993, Cl. 604/67, REMOTELY PROGRAMMABLE INFUSION SYSTEM, Paul Epstein, et. al., Owner of Record: *Abbott Laboratories, Abbott Park, Ill.*, Attorney or Agent: Ronald M. Anderson, Ex. Gp.: 3309

5,117,917, Re. S.N. 08/004,846, Filed Jan. 19, 1993, Cl. 169/46, FIRE EXTINQUISHING METHODS UTILIZING

PERFLUOROCARBONS, Mark L. Robin, et. al., Owner of Record: *Great Lakes Chemical Corp., West Lafayett, Ind.*, Attorney or Agent: Thomas Q. Henry, Ex. Gp.: 3102

5,146,193, Re. S.N. 08/000,939, Filed Jan. 4, 1993, Cl. 333/206, MONOLITHIC CERAMIC FILTER OR DUPLEXER HAVING SURFACE MOUNT CORRECTIONS AND TRANSMISSION ZEROES, Raymond L. Sokola, Owner of Record: *Motorola, Inc., Schaumburg, Ill.*, Attorney or Agent: Joseph P. Krause, Ex. Gp.: 2502

5,151,239, Re. S.N. 08/001,137, Filed Jan. 6, 1993, Cl. 264/272.110, WIRE JUNCTION ENCAPSULATING WIRE CONNECTOR AND METHOD OF MAKING SAME, Lloyd Herbert King, Jr., Owner of Record: *King Technology of Missouri, Inc., St. Louis, Mo.*, Attorney or Agent: Carl L. Johnson, Ex. Gp.: 1307

Requests for Reexamination Filed

Notice under 37 CFR 1.11 (c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19 (a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,200,276, Reexam. No. 90/002,940, Requested Jan. 26, 1993, Cl. 271/279, SHINGLING AND STACKING OF CONVEYED SHEET MATERIAL, Carl R. Marschke, Owner of Record: *Marquip, Inc., Phillips, Wis.*, Attorney or Agent: Andrus, Sceales, Starke & Sawall, Milwaukee, Wis., Ex. Gp.: 3101, Requester: Thomas K. Stine, Wallenstein, Wagner & Hattis, Ltd., Chicago, Ill.

4,273,325, Reexam. No. 90/002,941, Requested Jan. 26, 1993, Cl. 271/220, SHINGLED SHEET ALIGNMENT, Dennis W. Rodewald, Owner of Record: *Marquip, Inc., Phillips, Wis.*, Attorney or Agent: Andrus, Sceales, Starke & Sawall, Milwaukee, Wis., Requester: Thomas K. Stine, Wallenstein, Wagner & Hattis, Ltd., Chicago, Ill.

4,335,107, Reexam. No. 90/002,913, Requested Dec. 30, 1992, Cl.424/93.000, MAXTURE TO PROTECT POULTRY FROM SALMONELLA, Glenn H. Snoeyenbos, et. al., Owner of Record: *Orion-Yhtyma Oy, Turky, Finland*, Attorney or Agent: Ronald L. Grudziecki, Burns, Doane, Swecker & Mathis, Alexandria, Va., Ex. Gp.: 1203, Requester: Owner

4,421,574, Reexam. No. 90/002,920, Requested Jan. 4, 1993, Cl. 148/111, METHOD FOR SUPRESSING INTERNAL OXIDATION IN STEEL WITH ANTIMONY ADDITION, Grigory Lyudkovsky, Owner of Record: *Inland Steel Corp., Chicago, Ill.*, Attorney or Agent: Alvin D. Shulman, Marshall, O'Toole, Gerstein, Murray & Bicknell, Chicago, Ill., Ex. Gp.: 1101, Requester: USX Corp., Pittsburgh, Pa.

4,509,916, Reexam. No. 90/002,919, Requested Jan. 4, 1993, Cl. 431/273, DEVICE FOR PRODUCING IGNITION SPARKS WHEN FALLING ON A PYROPHORIC FLINT, Guy La Forest Le Boudic, Owner of Record: *BIC & Co., Milford, Conn.*, Attorney or Agent: Wenderoth, Lind & Ponack, Washington, D.C., Ex. Gp.: 3405, Requester: John S. Egbert, Houston, Tex.

4,528,481, Reexam. No. 90/002,933, Requested Jan. 8, 1993, Cl. 315/248, TREATMENT OF AMORPHOUS MAGNETIC ALLOYS TO PRODUCE A WIDE RANGE OF MAGNETIC PROPERTIES, Joseph J. Becker, et. al., Owner of Record: *Inventor, Schenectady, N.Y.; Fred E. Luborsky, Schenectady, N.Y.; Isreal S. Jacobs, Schenectady, N.Y.; Richard O'McCary, Schenectady, N.Y.*, Attorney or Agent: Marvin Snyder, General Electric Co., Schenectady, N.Y., Ex. Gp.: 2606, Requester: Dann, Dorfman, Harrell & Skillman, Philadelphia, Pa.

4,780,451, Reexam. No. 90/002,938, Requested Jan. 27, 1993, Cl. 514/012, COMPOSITION AND METHOD FOR PRODUCING SUPEROVULATION IN CATTLE, Llyod E. Donaldson, Owner of Record: *Asua International, Inc., Dallas, Tex.*, Attorney or Agent: Hubbard, Thurman, Turner & Turner, Dallas, Tex., Ex. Gp.: 1806, Requester: Robert J. Patch, Arlington, Va.

4,865,854, Reexam. No. 90/002,927, Requested Dec. 23, 1992, Cl. 426/107, MICROWAVE FOOD PACKAGE, Curtis L. Larson, Owner of Record: *Minnesota Mining and Manufacturing Co., St. Paul, Minn.*, Attorney or Agent: Leland D. Schultz, St. Paul, Minn., Ex. Gp.: 1302, Requester: Owner

4,898,092, Reexam. No. 90/002,937, Requested Jan. 25, 1993, Cl. 099/487, FEED GRAIN CONDITIONING APPARATUS, David G. Greer, Owner of Record: *Agri Chem, Inc., Anoka, Minn.*, Attorney or Agent: Burd, Bartz & Gutenkauf, Minneapolis, Minn., Ex. Gp.: 2402, Requester: Owner

4,926,840, Reexam. No. 90/002,934, Requested Jan. 13, 1993, Cl. 126/110, PILOT GAS BYPASS SYSTEM FOR FUEL-FIRED FURNACES, Timothy J. Shellenberger, et. al., Owner of Record: *Rheem Manufacturing Co., New York, N.Y.*, Attorney or Agent: J. Richard Konneker, Konneker & Bush, Plano, Tex., Ex. Gp.: 3406, Requester: Owner

5,009,982, Reexam. No. 90/002,935, Requested Jan. 14, 1993, Cl. 430/280, RESIST INK COMPOSITION, Yuichi Kamayachi, et. al., Owner of Record: *Taiyo Ink Manufacturing Co., Tokyo, Japan*, Attorney or Agent: Martin J. Miller, Frost & Jacobs, Cincinnati, Ohio, Ex. Gp.: 1507, Requester: Owner

5,110,570, Reexam. No. 90/002,921, Requested Dec. 23, 1992, Cl. 423/277, PREPARATION OF CRYSTALLINE POROUS BOROSILICATES, Giuseppe Bellussi, et. al., Owner of Record: *Enirichem Sp. A. Corso, Milan, Italy; Enrichem Synthsesis Spa, Palermo, Italy; Sramprogetti Spa, Milan, Italy*, Attorney or Agent: Philip E. Roux, Shea & Gould, New York, N. Y., Ex. Gp.: 1106, Requester: Owner

5,111,871, Reexam. No. 90/002,912, Requested Dec. 21, 1992, Cl. 164/063, METHOD OF VACUUM CASING, Arnold J. Cook, Owner of Record: *P Cast Equipment Corp., Pittsburgh, Pa.*, Attorney or Agent: Ansel M. Schwartz, Pittsburgh, Pa., Ex. Gp.: 3205, Requester: Massachusetts Institute of Technology, Cambridge, Mass.

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED JAN. 25, 1993 DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
86,208	71/056,862	4/23/1912
86,209	71/056,863	4/23/1912
289,978	71/317,343	12/15/1931
293,238	71/320,565	4/19/1932
293,252	71/322,058	4/19/1932
293,255	71/321,748	4/19/1932
293,263	71/318,951	4/19/1932
293,268	71/320,945	4/19/1932
293,297	71/290,960	4/19/1932
293,301	72/320,534	4/19/1932
293,308	71/322,257	4/19/1932

Reg. Number	Serial Number	Reg. Date
293,319	71/319,085	4/19/1932
293,354	71/317,198	4/19/1932
293,360	71/322,133	4/19/1932
293,392	71/315,877	4/19/1932
293,397	71/316,032	4/19/1932
293,400	71/317,563	4/19/1932
293,409	71/321,410	4/19/1932
293,426	71/322,417	4/19/1932
293,735	71/322,077	5/03/1932
444,682	71/521,262	4/22/1952
555,421	71/611,558	2/26/1952
557,791	71/523,903	4/22/1952
557,792	71/523,912	4/22/1952
557,801	71/540,941	4/22/1952
557,802	71/540,942	4/22/1952
557,814	71/562,605	4/22/1952
557,815	71/562,689	4/22/1952
557,834	71/576,769	4/22/1952
557,836	71/576,896	4/22/1952
557,841	71/579,205	4/22/1952
557,848	71/581,486	4/22/1952
557,849	71/581,930	4/22/1952
557,851	71/583,216	4/22/1952
557,852	71/584,163	4/22/1952
557,856	71/586,224	4/22/1952
557,859	71/587,487	4/22/1952
557,860	71/587,577	4/22/1952
557,861	71/587,658	4/22/1952
557,868	71/589,816	4/22/1952
557,872	71/590,192	4/22/1952
557,874	71/590,445	4/22/1952
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557,898	71/598,500	4/22/1952
557,907	71/600,499	4/22/1952
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557,941	71/604,024	4/22/1952
557,942	71/604,025	4/22/1952
557,943	71/604,026	4/22/1952
557,946	71/604,042	4/22/1952
557,953	71/604,841	4/22/1952
557,961	71/605,711	4/22/1952
557,968	71/606,745	4/22/1952
557,973	71/607,974	4/22/1952
557,984	71/609,543	4/22/1952
557,987	71/609,723	4/22/1952
557,988	71/609,737	4/22/1952
557,997	71/610,928	4/22/1952
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558,006	71/611,620	4/22/1952
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558,014	71/612,293	4/22/1952
558,021	71/612,905	4/22/1952
558,025	71/612,961	4/22/1952
558,032	71/613,148	4/22/1952
558,049	71/613,791	4/22/1952
558,052	71/613,896	4/22/1952
558,055	71/613,959	4/22/1952
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558,073	71/614,768	4/22/1952
558,074	71/614,910	4/22/1952
558,077	71/615,061	4/22/1952
558,078	71/615,170	4/22/1952
558,082	71/616,124	4/22/1952
558,087	71/616,976	4/22/1952
558,088	71/616,982	4/22/1952
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558,092	71/617,971	4/22/1952
558,096	71/619,017	4/22/1952
558,101	71/545,450	4/22/1952
558,132	71/586,405	4/22/1952
558,134	71/586,493	4/22/1952
558,145	71/605,315	4/22/1952
558,146	71/605,316	4/22/1952
558,156	71/607,170	4/22/1952
558,158	71/607,825	4/22/1952
558,170	71/613,634	4/22/1952
913,252	72/363,095	6/08/1971
928,858	72/384,610	2/08/1972
932,431	72/312,632	4/18/1972
932,432	72/338,603	4/18/1972
932,435	72/377,277	4/18/1972
932,436	72/386,806	4/18/1972
932,440	72/328,265	4/18/1972
932,442	72/367,317	4/18/1972
932,443	72/369,733	4/18/1972
932,446	72/379,462	4/18/1972
932,448	72/395,084	4/18/1972
932,450	72/365,484	4/18/1972
932,452	72/393,008	4/18/1972
932,454	72/369,352	4/18/1972
932,455	72/369,354	4/18/1972
932,456	72/372,517	4/18/1972
932,458	72/348,396	4/18/1972
932,460	72/376,278	4/18/1972
932,462	72/383,185	4/18/1972
932,463	72/383,875	4/18/1972
932,464	72/401,566	4/18/1972
932,465	72/347,641	4/18/1972
932,474	72/395,730	4/18/1972
932,475	72/397,850	4/18/1972
932,476	72/399,568	4/18/1972
932,479	72/400,942	4/18/1972
932,480	72/401,136	4/18/1972
932,484	72/401,759	4/18/1972
932,486	72/396,090	4/18/1972
932,487	72/389,100	4/18/1972
932,489	72/384,383	4/18/1972
932,492	72/373,002	4/18/1972
932,493	72/373,003	4/18/1972
932,494	72/373,004	4/18/1972
932,499	72/378,628	4/18/1972
932,500	72/378,869	4/18/1972
932,504	72/396,964	4/18/1972
932,506	72/349,217	4/18/1972
932,508	72/366,235	4/18/1972
932,511	72/372,018	4/18/1972
932,512	72/375,838	4/18/1972
932,515	72/400,516	4/18/1972
932,517	72/328,962	4/18/1972
932,518	72/395,953	4/18/1972
932,519	72/328,285	4/18/1972
932,521	72/376,297	4/18/1972
932,522	72/378,738	4/18/1972
932,523	72/380,377	4/18/1972
932,524	72/380,655	4/18/1972
932,525	72/389,207	4/18/1972
932,526	72/347,944	4/18/1972
932,527	72/347,945	4/18/1972
932,529	72/361,982	4/18/1972
932,532	72/377,629	4/18/1972
932,533	72/382,791	4/18/1972
932,534	72/386,145	4/18/1972
932,537	72/387,710	4/18/1972
932,541	72/357,992	4/18/1972
932,542	72/358,489	4/18/1972
932,543	72/361,097	4/18/1972
932,546	72/365,950	4/18/1972
932,548	72/372,108	4/18/1972
932,549	72/372,594	4/18/1972
932,551	72/376,543	4/18/1972
932,559	72/401,265	4/18/1972
932,568	72/377,328	4/18/1972
932,570	72/382,882	4/18/1972
932,571	72/367,504	4/18/1972
932,578	72/384,397	4/18/1972
932,579	72/393,799	4/18/1972

Reg. Number	Serial Number	Reg. Date
932,586	72/346,837	4/18/1972
932,590	72/358,067	4/18/1972
932,591	72/378,697	4/18/1972
932,594	72/379,673	4/18/1972
932,600	72/388,974	4/18/1972
932,601	72/388,975	4/18/1972
932,602	72/388,976	4/18/1972
932,608	72/381,056	4/18/1972
932,610	72/383,274	4/18/1972
932,614	72/366,175	4/18/1972
932,616	72/375,186	4/18/1972
932,619	72/381,024	4/18/1972
932,621	72/383,783	4/18/1972
932,625	72/398,796	4/18/1972
932,630	72/372,026	4/18/1972
932,634	72/381,557	4/18/1972
932,635	72/398,258	4/18/1972
932,639	72/383,220	4/18/1972
932,644	72/385,522	4/18/1972
932,645	72/379,117	4/18/1972
932,648	72/397,427	4/18/1972
932,650	72/307,820	4/18/1972
932,653	72/354,841	4/18/1972
932,655	72/361,671	4/18/1972
932,656	72/362,589	4/18/1972
932,657	72/363,114	4/18/1972
932,660	72/375,857	4/18/1972
932,661	72/375,887	4/18/1972
932,662	72/380,383	4/18/1972
932,665	72/381,375	4/18/1972
932,666	72/381,376	4/18/1972
932,667	72/381,377	4/18/1972
932,668	72/381,895	4/18/1972
932,669	72/382,515	4/18/1972
932,671	72/384,289	4/18/1972
932,674	72/386,016	4/18/1972
932,679	72/397,645	4/18/1972
932,680	72/397,647	4/18/1972
932,683	72/365,473	4/18/1972
932,684	72/365,474	4/18/1972
932,685	72/370,860	4/18/1972
932,686	72/381,733	4/18/1972
932,687	72/390,366	4/18/1972
932,689	72/393,262	4/18/1972
932,694	72/377,734	4/18/1972
932,695	72/378,048	4/18/1972
932,696	72/384,498	4/18/1972
932,697	72/384,499	4/18/1972
932,699	72/384,631	4/18/1972
932,719	72/364,758	4/18/1972
932,722	72/374,315	4/18/1972
932,723	72/380,499	4/18/1972
932,727	72/374,598	4/18/1972
932,747	72/380,343	4/18/1972
932,752	72/380,827	4/18/1972
932,753	72/372,113	4/18/1972
932,755	72/374,423	4/18/1972
932,756	72/374,425	4/18/1972
934,300	72/385,108	5/23/1972

Erratum

"All reference to Reexamination Certificate No. B1 D309,129 (1648th and 1777th) for 'L-SHAPED ELECTRICAL CONNECTOR' appearing in the *Official Gazette* of Mar. 3, 1992 and Aug. 25, 1992 should be deleted since no rexamination certificate has been granted."

"All reference to Patent No. 5,100,411 to Panos G. Koutrouvelis of Virginia for 'STEREOTACTIC DEVICE' appearing in the *Official Gazette* of Mar. 31, 1992 should be deleted since no patent was granted."

"All reference to Patent No. 5,181,121 to Toshio Matsumoto, et. al., of Nara, Japan, for 'LIQUID CRYSTAL DISPLAY DEVICE' appearing in the *Official Gazette* of Jan. 19, 1993 should be deleted since no patent was granted."

Patents Available for License or Sale

D,322,870 PET FEEDING DISH STAND, Janet M. Battalene, P.O. Box 642, Killingworth, Conn. 06419

5,127,775 FAIL SAFE STOP FOR A DRILL PRESS CONTROL DEVICE, James M. Broadment, et. al., Steven N. Fox, Chaplin, Neal & Dempsey, 1331 Main St., Springfield, Mass. 01103

5,131,195 EARTHQUAKE-RESISTANT INSULATOR FOR BUILDINGS, Patrice Bellavista, Neil F. Greenblum, Sandler, Greenblum & Bernstein, 2920 South Glebe Rd., Arlington, Va. 22206

5,143,343 AUTOMOBILE RADIO SECURITY SYSTEM, Daniel P. Katz, Robert F. Zielinski, Ballard Spahr Andrews & Ingersoll, 1735 Market St., 51st Floor, Philadelphia, Pa. 19103-7599

5,146,557 USER INTERFACE FOR A GOLF GREEN AND A GOLF PUTT MODELING SYSTEM, Boris Yamrom, et. al., Douglas E. Stoner, General Electric Co., P.O. Box 8, Bldg. K-1, Rm. 5A1A, Schenectady, N.Y. 12301

5,152,065 TOOL HEAD HAVING AN EASILY REPLACEABLE HANDLE ATTACHED THERETO, Alfred F. Harding, P.O. Box 7, Orleans, Calif. 95556

5,156,618 LASER MIST EVACUATOR ATTACHMENT, Nello Fiore, 4945 Carlyn Dr., Pittsburgh, Pa. 15236

5,159,703 SILENT SUBLIMINAL PRESENTATION SYSTEM, O. M. Lowery, 5188 Falconwood Ct., Norcross, Ga. 30071

5,163,574 PEDAL TRASH BIN. Folarin Sosan, 117 Varnum St., N.E. #6, Washington, D.C. 20011

5,192,177 MOBILE HARVESTER FOR HAY BALES, Marcel E. Cardinal, Roland L. Morneau, 4101 Jarry Est., Suite 305, Montreal, Que., Canada H1Z 2H4

Reinstatement to Register

The following list of persons, whose names have been previously removed from the Register of Attorneys and Agents pursuant to the provisions of 37 CFR 10.11(b), have been reinstated in view of the required fee and information they furnished to the Office of Enrollment and Discipline.

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Feb. 5, 1993

CAMERON WEIFFENBACH
Director, Office of Enrollment and Discipline

PATENT NOTICES

Certificates of Correction For Week of March 9, 1993

D 317,774	4,984,779	5,030,887	5,047,225
D 318,527	4,985,910	5,031,136	5,047,407
D 320,375	4,989,262	5,031,746	5,047,424
D 320,651	4,990,296	5,031,859	5,047,947
D 320,665	4,990,514	5,032,196	5,048,037
D 321,193	4,990,624	5,032,404	5,048,352
D 321,511	4,990,657	5,032,560	5,048,386
D 321,668	4,991,830	5,032,739	5,048,537
D 322,079	4,992,156	5,033,063	5,048,625
4,321,748	4,993,741	5,033,172	5,048,703
4,365,462	4,994,531	5,033,479	5,048,799
4,432,049	4,994,671	5,033,649	5,048,841
4,435,047	4,995,124	5,034,228	5,048,971
4,517,404	4,996,175	5,034,260	5,049,077
4,680,437	4,996,393	5,035,016	5,049,267
4,771,465	4,997,865	5,035,376	5,049,464
4,795,673	4,998,979	5,035,865	5,049,869
4,808,798	5,002,842	5,035,981	5,049,982
4,810,227	5,002,945	5,036,331	5,050,090
4,818,600	5,002,989	5,036,824	5,050,430
4,849,479	5,004,179	5,037,843	5,050,459
4,851,375	5,005,019	5,037,903	5,050,586
4,860,086	5,005,025	5,038,174	5,050,667
4,861,420	5,005,068	5,038,240	5,050,747
4,862,470	5,007,541	5,038,527	5,050,867
4,876,308	5,008,690	5,039,357	5,050,897
4,881,989	5,009,251	5,039,613	5,051,112
4,890,628	5,009,897	5,039,654	5,051,156
4,890,792	5,010,446	5,039,779	5,051,293
4,897,779	5,010,534	5,039,815	5,051,556
4,897,926	5,010,565	5,040,072	5,051,944
4,903,837	5,010,912	5,040,199	5,051,950
4,904,446	5,001,497	5,040,431	5,051,986
4,905,762	5,011,859	5,040,446	5,052,099
4,908,557	5,013,303	5,040,736	5,052,724
4,909,772	5,013,937	5,040,744	5,053,600
4,910,259	5,014,151	5,040,781	5,053,761
4,912,642	5,014,284	5,041,293	5,053,781
4,917,878	5,016,035	5,041,437	5,053,864
4,918,627	5,016,205	5,041,493	5,054,255
4,919,707	5,016,593	5,041,509	5,054,383
4,927,665	5,016,902	5,041,558	5,054,594
4,929,470	5,017,532	5,041,613	5,054,605
4,931,559	5,018,518	5,041,873	5,054,869
4,935,011	5,019,308	5,041,921	5,054,964
4,935,055	5,019,911	5,042,797	5,055,036
4,938,045	5,020,184	5,043,042	5,055,039
4,940,223	5,020,261	5,043,221	5,055,075
4,943,145	5,020,393	5,043,564	5,055,259
4,946,579	5,021,051	5,043,747	5,055,381
4,946,786	5,021,308	5,043,769	5,055,411
4,949,070	5,021,416	5,043,849	5,055,488
4,949,107	5,021,517	5,043,860	5,055,525
4,949,878	5,022,217	5,044,217	5,056,002
4,950,631	5,022,677	5,044,273	5,056,031
4,952,567	5,023,139	5,044,360	5,056,057
4,957,304	5,023,248	5,044,467	5,056,153
4,959,106	5,023,612	5,044,713	5,056,358
4,963,110	5,024,040	5,044,802	5,056,450
4,964,109	5,026,348	5,045,092	5,057,241
4,967,704	5,026,439	5,045,183	5,057,290
4,970,073	5,026,599	5,045,476	5,057,529
4,971,906	5,026,618	5,045,610	5,057,659
4,971,923	5,027,405	5,045,640	5,057,904
4,972,406	5,028,157	5,045,780	5,058,006
4,973,335	5,028,613	5,045,887	5,058,032
4,975,635	5,028,647	5,046,094	5,058,130
4,978,660	5,028,833	5,046,098	5,058,157
4,978,709	5,029,161	5,046,172	5,058,413
4,979,901	5,029,207	5,046,381	5,058,430
4,979,921	5,029,212	5,046,610	5,058,772
4,980,696	5,029,228	5,046,718	5,058,809
4,980,757	5,029,456	5,046,775	5,058,921
4,982,789	5,029,622	5,046,937	5,059,029
4,983,518	5,029,668	5,047,143	5,059,052
4,984,276	5,029,988	5,047,205	5,059,178
5,059,254	5,061,903	5,064,440	5,068,223
5,059,401	5,062,317	5,064,542	5,068,514
5,059,599	5,062,439	5,064,569	5,068,521
5,059,601	5,062,449	5,064,578	5,068,988
5,059,715	5,062,469	5,064,614	5,069,039
5,059,835	5,062,549	5,064,735	5,069,161
5,060,070	5,062,580	5,064,748	5,069,616
5,060,082	5,062,586	5,064,770	5,070,121
5,060,181	5,062,594	5,065,200	5,070,122
5,060,197	5,062,691	5,065,268	5,070,860
5,060,220	5,062,748	5,065,456	5,070,989
5,060,289	5,062,781	5,056,500	5,070,996
5,060,504	5,062,810	5,065,872	5,071,302
5,060,529	5,062,818	5,066,053	5,071,574
5,060,583	5,062,872	5,066,172	5,071,839
5,060,637	5,062,885	5,066,294	5,072,104
5,060,640	5,062,934	5,066,308	5,072,551
5,060,666	5,063,024	5,066,397	5,072,782
5,060,748	5,063,374	5,066,493	5,073,810
5,060,913	5,063,459	5,066,762	5,095,673
5,061,013	5,063,509	5,066,769	5,126,800
5,061,119	5,063,642	5,066,836	5,139,568
5,061,160	5,063,711	5,066,851	5,146,153
5,061,191	5,063,997	5,067,224	5,148,472
5,061,353	5,064,011	5,067,426	5,161,484
5,061,635	5,064,232	5,067,506	
5,061,672	5,064,354	5,067,850	
5,061,734	5,064,405	5,067,970	

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PATENT EXAMINING CORPS

STEPHEN G. KUNIN, Acting Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

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GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100 — D. E. TALBERT, Director	308-0661	3/14/92
ORGANIC CHEMISTRY, GROUP 1200 — JOHN F. TERAPANE, JR., Director	308-1235	6/11/92
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300 — EDWARD E. KUBASIEWICZ, Director	308-0651	5/15/92
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 1500 — J. O. THOMAS, Director	308-2351	5/15/92
BIOTECHNOLOGY, GROUP 1800 — BARRY S. RICHMAN, Director	308-0196	8/08/91
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PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400 — CARLTON CROYLE, Director	308-0771	2/21/92
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500 — JOSEPH J. ROLLA, Director	308-0956	8/20/91
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600 — BOBBY R. GRAY, Director	305-4700	7/27/91
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SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400 — JOHN KITTLE, Director	308-0861	5/15/92
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*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during February 1993 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151

Patents	Numbers 3,935,596 to 3,946,800 inclusive
Plant Patents	3,828 to 3,830

REEXAMINATIONS

MARCH 9, 1993

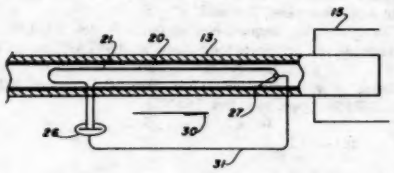
Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,976,230 (1941st)

SYSTEM FOR DISPENSING POLYURETHANE AND THE LIKE

Charles R. Sperry, Wilton, Conn., assignor to Instapak Corporation, Danbury, Conn.

Reexamination Request No. 90/002,051, Jun. 12, 1990.
Reexamination Certificate for Patent No. 3,976,230, issued Aug. 24, 1976, Ser. No. 512,441, Oct. 7, 1974.
Continuation of Ser. No. 318,167, Dec. 26, 1972, abandoned
Int. Cl.[5] B67D *5/62*
U.S. Cl. 222—146.5



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1, 2** and **3** are cancelled.

[1. In a system for dispensing a reactive mixture of at least two reacting substances such as polyurethane precurser chemicals wherein said substances are required to be heated above ambient temperature to cause proper and timely reaction thereof and which system includes receptacles for said reacting substances, conduits therefor and a common dispensing means at the output end of said conduits, the improvements comprising:

a. a conduit member for each such reacting substance extending from the receptacle thereof to said common dispensing means for the reaction mixture;

b. an electrically conducting wire heating element, comprising the sole heating means in the present system, loosely positioned in the bore of each such conduit member and adapted to be in intimate contact with the reacting substance therein, which heating element extends essentially from the input end to the output end of said conduit and which heating element is capable of raising the temperature of flowing reacting substance from ambient temperature, lower than the reacting temperature, to proper and constant reaction temperature at the output end as it passes through the length of said conduit;

c. an electrical power supply for said heating element; and

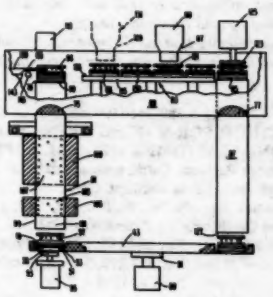
d. a temperature sensing device positioned in the bore of at least one of said conduits downstream and adjacent the output end thereof, said device directly controlling the output of said electrical power supply and thus indirectly the energization of said heating element whereby the temperature of said reacting substance at said output end is maintained substantially constant at reaction temperature.]

B1 4,733,631 (1942nd)

APPARATUS FOR COATING SUBSTRATE DEVICES

David Boyarsky, Cherry Hill, N.J., and Robert T. Vaughan, Cheltenham, Pa., assignors to Denton Vacuum Inc., Cherry Hill, N.J.

Reexamination Request No. 90/002,163, Oct. 12, 1990.
Reexamination Certificate for Patent No. 4,733,631, issued Mar. 29, 1988, Ser. No. 913,714, Sep. 30, 1986.
Int. Cl.[5] C23C *16/00*
U.S. Cl. 118—719



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1, 3–5** and **13** are cancelled.

Claims **2, 6, 9, 10,** and **12** are determined to be patentable as amended.

Claims **7, 8** and **11,** dependent on an amended claim, are determined to be patentable.

New claims **14–18** are added and determined to be patentable.

14. An arrangement for coating a plurality of substrates, each of which substrates, is formed to have a generally planar upperside upon which a coating is intended to be deposited and an underside, comprising in combination: a plurality of carrier means with one each holding an associated different one of said substrates, each of said carrier means formed to have said underside of its associated substrate nested therein to form a first open space above the substrate and a second open space below the substrate and each of said carrier means formed to have aperture means therein in close proximity to said underside of its associated substrate, to readily enable degassing of its associated substrate, said aperture means including a first aperture means connected to said first open space and a second aperture means connected to said second open space;

a plurality of sealing devices, each of which is securely fitted onto a different associated one of said carrier means whereby each of said sealing devices moves with its associated carrier means;

first vertical elongated cavity means, having first and second ends and having a vertical central axis extending from the first end to the second end, and having sidewall means and having a plurality of apertures in at least one section of said sidewall means;

said first vertical elongated cavity means, designed to have said plurality of carrier means move in a train-like formation in a vertical direction therethrough with the uppersides of the

substrates held generally normal to said central axis and further designed to enable each of said carrier means to hold its associated sealing device firmly against said sidewall means whereby, as each of said sealing devices moves, with its associated carrier means, through said first vertical section, to be degassed via said first and second aperture means and to have contaminate material removed by the degassing;

transport means, designed and disposed to move said carrier means which have passed through said first elongated cavity means;

vacuum chamber coating means, designed to house said transport means, said vacuum chamber coating means including pump means which is formed to maintain the pressure, in said vacuum chamber coating means, at a pressure which is higher than said high vacuum condition in said at least one section, said vacuum chamber coating means further designed to house means to materially coat said substrates, said means to materially coat disposed with respect to said transport means and formed to materially coat said substrates, which are being moved by said transport means;

and, means to remove said carrier means from said transport means and from said vacuum chamber coating means.

B1 4,889,744 (1943rd)

METHOD FOR MAKING OPEN-CELL, SILICONE-ELASTOMER MEDICAL IMPLANT

Joel Quaid, Santa Barbara, Calif., assignor to Medical Products Development, Inc., Santa Barbara, Calif.

Reexamination Request No. 90/002,542, Dec. 13, 1991.
Reexamination Certificate for Patent No. 4,889,744, issued Dec. 26, 1989, Ser. No. 189,195, May 2, 1988.
Division of Ser. No. 927,272, This application Nov. 4, 1986

Int. Cl.[5] A61F *2/12*
U.S. Cl. 427—2

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim 2 is cancelled.

Claims 1, 3, 10 and 16 are determined to be patentable as amended.

Claims 4–9 and 11–15 dependent on an amended claim, are determined to be patentable.

New claims 17–23 are added and determined to be patentable.

1. A method for providing an open-cell structure to a surface of a layer of a silicone elastomer *shell of a mammary prosthesis, the method* comprising the steps of [applying a layer silicone elastomer;[;

forming a layer of uncured silicone elastomer having an exposed surface;

forcing a first group of solid particles through the exposed surface and into the layer to a first range of depths where they are completely below the exposed surface of the uncured silicone elastomer;

forcing a second group of solid particles against the exposed surface and into the layer to a second range of depths less than the first so a part of each particle in the second group is not covered by the uncured silicone elastomer, and so particles in the second group contact particles in the first group.

[applying solid particles to the surface before the layer is fully cured;] *wherein the solid particles have a diameter ranging from about 10 microns to about 600 microns;*

fully curing the layer *of uncured silicone elastomer in the shell of the mammary prosthesis;* and

[dissolving the solid particles with a solvent that does not dissolve the silicone elastomer to any appreciable extent]

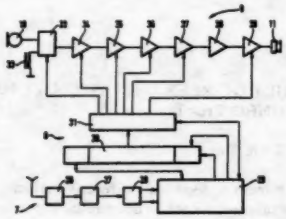
contacting the exposed surface of cured silicone elastomer with a solvent for the particles, but which does not dissolve the silicone elastomer to any appreciable extent so particles in the second group dissolve and provide a way for the particle solvent to reach and dissolve particles in the first group to form the open-cell structure having an interconnected network of cells, wherein some of the cells open directly to the exposed surface, and other cells communicate with the exposed surface only through cells which open directly to the exposed surface.

B1 4,947,432 (1944th)

PROGRAMMABLE HEARING AID

Jan Tøpholm, Holte, Denmark, assignor to Tøpholm & Westermann Aps, Vaerloese, Denmark

Reexamination Request No. 90/002,658, Feb. 13, 1992.
Reexamination Certificate for Patent No. 4,947,432, issued Aug. 7, 1990, Ser. No. 5,976, Jan. 22, 1987.
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1986, 3603204; Dec. 16, 1986, 3642828
Int. Cl.[5] H04R *25/00*
U.S. Cl. 381—68.2



AS A RESULT OF REEXAMINATION, IT THAS BEEN DETERMINED THAT:

The patentability of claims 1–15 is confirmed.

New claims 16–20 are added and determined to be patentable.

1. A remote controlled programmable hearing aid system of the type comprising an amplifier and signal processing section with remotely controllable transfer characteristics, wherein the transfer characteristics at any given time are determined by a group of parameters, said system further comprising user-operable external control unit and a transmitter for wireless transmission of control signals, a hearing aid and a receiver located in said hearing aid for receiving and demodulating said control signals, characterized in that:

said external control unit comprises: a memory (**20**) for storing a plurality of groups of parameters each for determining a different transfer characteristic of the hearing aid; a control panel with user-operable entry means (**2**) for randomly accessing and recalling a stored group of parameters from said memory; and a transmitter (**4**) for transmitting said recalled parameters as control signals; and

said hearing aid contains a hearing aid control unit (**8**) responsive to demodulated control signals from said re-

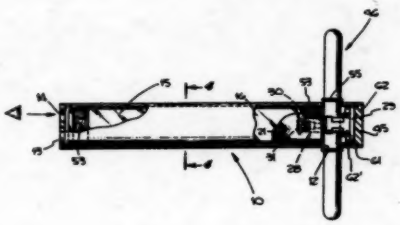
ceiver for controlling the transfer characteristics of said signal processing section.

B1 5,029,954 (1945th)

KALEIDOSCOPE

Mark W. Eilrich, Sonora, Calif., and Hazel O. Baker, Bethesda, Md., assignors to Wildewood Creative Products, Sonora, Calif.

Reexamination Request No. 90/002,813, Aug. 10, 1992.
Reexamination Certificate for Patent No. 5,029,954, issued Jul. 9, 1991, Ser. No. 607,373, Oct. 31, 1990.
Int. Cl.[5] G02B *23/00*
U.S. Cl. 359—617



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–7, 9–12** and **14–16** are cancelled.

Claims **8, 13** and **17–24** are determined to be patentable as amended.

8. [In the kaleidoscope of claim **1** including] *A kaleidoscope comprising:*

an elongated hollow generally tubularly shaped housing comprised of a generally cylindrical wall open at both ends;

a first end cap closing off one open end of said tubularly shaped housing;

a mirror assembly mounted internally of said housing being triangularly configured with a central triangularly shaped viewing channel extending down through the interior of said assembly, said assembly being comprised of a plurality of mirrors, at least two of said mirrors being silvered on the inside, said first end cap having an opening therethrough aligned with said viewing channel;

said housing having a hole through said generally cylindrical wall, said mirror assembly extending from a point adjacent said first end cap to a point adjacent to but terminating before said hole;

a second opaque end cap closing off the other open end of said housing;

an elongated object tube removably mounted in said hole and reciprocal along an axis extending generally normal to the longitudinal axis of said housing, said tube being transparent and having a closed off interior filled with a clear transparent viscous fluid having a plurality of discrete particles of a reflective material floating therein; and

a light assembly mounted in the other open end of said housing adapted to provide light in the interior of said housing, *said light assembly being gravity actuated being normally unlighted when said housing is in a horizontal position and being lighted when said housing is in a position other than horizontal, said light assembly having a first extension portion extending into the interior of said housing on one side of said mirror assembly having a light socket with a removable light bulb therein, and a battery housing on said light assembly extending into the interior of the housing having at least one removable battery thereon, and a mercury switch mounted on said light assembly and being electronically connected to said light bulb socket and said battery housing, said light bulb extending toward said object tube between said object tube and said mirror assembly.*

REISSUES

MARCH 9, 1993

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,190

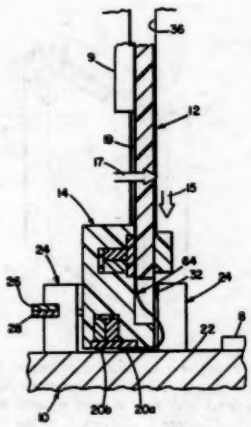
CONNECTOR ARRANGEMENT

Leon Rubinstein, Natick, Mass., assignor to Rogers Corporation, Rogers, Conn.

Original No. 4,744,764, dated May 17, 1988, Ser. No. 867,473, May 27, 1986. Application for reissue May 17, 1990, Ser. No. 525,875

Int. Cl.[5] H01R *9/09*

U.S. Cl. 439—67 **39 Claims**



21. An electrical connector system for electrically interconnecting, in a readily removable manner, circuit boards that have a generally orthogonal relationship with each other, comprising:

first and second rigid circuit boards on which arrays of conductive paths of respective first and second circuits are disposed,

first connector structure,

a flexible circuit that carries conductive paths that correspond to the circuits to be connected, said flexible circuit being supported by said first connector structure,

second connector structure with which said first connector structure can be mateably, releasably engaged,

one of said connector structures being mounted on said first rigid circuit board in position to engage the other of said connector structures, and the other of said connector structures being mounted on the face of said second rigid circuit board in position to be engaged,

an electrical interconnection between the conductive paths of the circuit board on which said first connector structure is mounted and the corresponding conductive paths of said flexible circuit, and

said mateable connector structures constructed and arranged to enable, releasable electrical interconnection between conductive paths on the other of said circuit boards and the corresponding conductive paths of said flexible circuit by reversible motions that include engaging motion of said first circuit board edgewise toward the face of said second circuit board, to carry the connector structure mounted on said first circuit board into mating engagement with the connector structure mounted on the face of said second board, and motion of one of said connector structures in a direction transverse to the direction of said engaging motion.

Re. 34,191

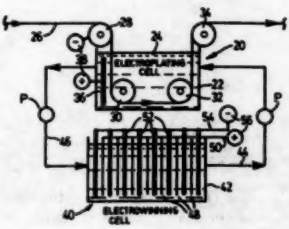
PROCESS FOR ELECTROPLATING METALS

Craig J. Brown, Pickering, Canada, assignor to Eco-Tec Limited, Pickering, Canada

Original No. 4,906,340, dated Mar. 6, 1990, Ser. No. 359,298, May 31, 1989. Application for reissue Sep. 6, 1991, Ser. No. 756,257

Int. Cl.[5] C25D *17/00, 21/00*

U.S. Cl. 205—96 **15 Claims**



10. An apparatus for electroplating metals comprising:

an electroplating cell including a bath for containing a plating solution of a metallic salt, a cathode comprising a workpiece to be plated, and a soluble anode, the anode current efficiency of said cell being greater than the cathode current efficiency;

an electrowinning cell which includes a bath [and], at least one insoluble anode; *and at least one insoluble cathode;*

means for coupling said electroplating cell bath with said electrowinning cell bath for permitting circulation of said plating solution between said cells;

a source of direct electric current for connection across the anode and cathode of the electroplating cell for electroplating a metal onto said workpiece; [and,]

a source of direct current for connection across said anode and cathode of the electrowinning cell so as to cause deposition of metal from said plating solution onto said cathode[.]*ep ; and,*

means for controlling the amount of current flowing through the electrowinning cell which results in deposition of metal to be at least substantially equal to the amount of current flowing through the electroplating cell which results in the evolution of hydrogen gas.

Re. 34,192

MINIATURIZED Q-SWITCHED DIODE PUMPED SOLID STATE LASER

Thomas M. Baer, Mountain View, Calif., assignor to Spectra-Physics, Laser Diode Systems, Inc., Mountain View, Calif.

Original No. 4,761,786, dated Aug. 2, 1988, Ser. No. 945,609, Dec. 23, 1986. Continuation of Ser. No. 397,662, Aug. 23, 1989, abandoned, which is a continuation-in-part of Ser. No. 730,002, May 1, 1985, Pat. No. 4,653,056, and Ser. No. 811,546, Dec. 19, 1985, Pat. No. 4,656,635, which is a continuation-in-part of Ser. No. 730,002, May 1, 1985, Pat. No. 4,653,056 and Ser. No. 864,928, May 19, 1986, Pat. No. 4,665,529. Application for reissue Feb. 18, 1992, Ser. No. 837,098

Int. Cl.[5] H01S *3/092*

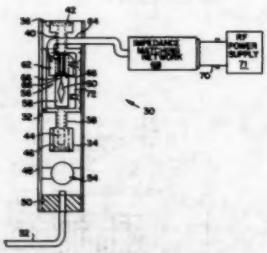
U.S. Cl. 372—10 34 Claims

27. A compact Q-switched solid state laser for producing short high peak power pulses, comprising:

a miniaturized solid state laser rod;

cavity forming means for defining a compact resonant cavity which contains the laser rod, said cavity forming means including output coupling means for extracting laser pulses from the cavity;

laser diode pumping means positioned to longitudinally end pump the laser rod and to match the pumping volume to the mode volume in the laser rod; and



a miniaturized Q-switch mounted in the resonant cavity in a position to introduce a loss in the cavity so the rod can be pumped to store energy without lasing, and to remove the loss so that lasing in the cavity occurs with stored energy being dumped into a short high peak power pulse of at least 10 microJoules TEMOO output.

Re. 34,193

[SNACK BAG] *BAG FOR OBJECTS SUCH AS SNACKS*

Robert J. Carey, P.O. Box 403, Middletown, N.J. 07748

Original No. 4,950,087, dated Aug. 21, 1990, Ser. No. 469,362, Jan. 24, 1990. Application for reissue Feb. 19, 1991, Ser. No. 656,516

Int. Cl.[5] B65D *33/24, 43/04*

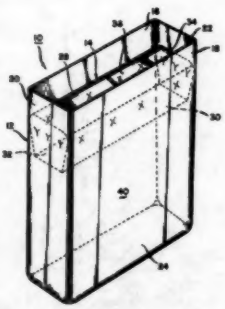
U.S. Cl. 383—43 3 Claims

2. Bag for containing snacks, comprising:

a first bag including opposed sides, opposed ends, a bottom and an open top;

a second bag including opposed sides, opposed ends, a bottom and an open top;

said second bag being inverted and at least portions thereof residing in said first bag with at least portions of said ends of said second bag being opposed to and secured to said ends of said first bag, with at least portions of said sides of said second bag being opposite at least portions of said sides of said first



bag and being in substantial engagement therewith but not secured thereto to provide a substantially air-tight seal therebetween, and with said bottom of said second bag being opposite said bottom of said first bag, said bottoms, said sides and said ends of said second bag and portions of said ends of said sides of said first bag providing in combination a chamber for receiving said snacks; and

access to said snacks contained in said chamber being provided by physically separating said opposed portions of said sides of said first and second bags.

PLANT PATENTS

GRANTED MARCH 9, 1993

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,169

P.F. 17 PEACH TREE

Paul J. Friday, P.O. Box 850, Coloma, Mich. 49038

Filed Jul. 5, 1991, Ser. No. 726,320

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—43.2 **1 Claim**

1. A new and distinct varity of peach tree substantially as illustrated and described as large size, vigorous and upright in growth and a regular and productive bearer of large size, yellow flesh freestone fruit with good flavor and eating quality; and being further characterized by a partially showy blossom of about $\frac{3}{4}$" diameter when in full bloom, said fruit at maturity being of substantially spheroidal shape with firm flesh and a red skin color cover 80% of the fruit, said maturity occurring about 15 days after maturity of the Redhaven peach.

8,170

***VINCA MINOR* NAMED SUMMERSNOW**

Carl R. Perrine, 6205 Lansing Ave., Jackson, Mich. 49201

Filed Nov. 5, 1990, Ser. No. 609,174

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—54.1 **1 Claim**

1. A new and distinct form of *Vinca minor* substantially as herein shown and described named 'Summersnow', characterized in particular by its variegated foliage with variations of green and white having profuse compact growth in full sunlight.

8,171

CHRYSANTHEMUM PLANT NAMED LYNN

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Aug. 7, 1991, Ser. No. 741,758

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—76 **1 Claim**

1. A new and distinct Chrysanthemum plant named Lynn, as described and illustrated.

8,172

CHRYSANTHEMUM PLANT NAMED CANTATA

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Aug. 16, 1991, Ser. No. 745,701

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—82.4 **1 Claim**

1. A new and distinct Chrysanthemum plant named Cantata, as described and illustrated.

8,173

GERANIUM PLANT NAMED FISLANTIS

Ingeborg Schumann, Münster, Fed. Rep. of Germany, assignor to Florfis AG, Binningen, Switzerland

Filed Oct. 18, 1991, Ser. No. 779,542

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—87.12 **1 Claim**

1. A new and distinct cultivar of Geranium plant named Fislantis, as illustrated and described.

8,174

GERANIUM PLANT NAMED FISHOG

Ingeborg Schumann, Münster, Fed. Rep. of Germany, assignor to Florfis AG, Binningen, Switzerland

Filed Oct. 18, 1991, Ser. No. 779,298

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—87.12 **1 Claim**

1. A new and distinct cultivar of Geranium plant named Fishog, as illustrated and described.

PATENTS

GRANTED Mar. 9, 1993

ERRATA

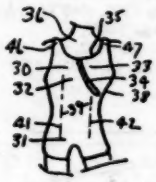
157-001	5,191,934
144-286	5,191,935
280-011	5,192,099
280-668	5,192,100
280-704	5,192,101
280-766	5,192,102
403-016	5,192,142
403-024	5,192,143
403-209	5,192,144
403-255	5,192,145
405-259	5,192,146
403-322	5,192,147
410-151	5,192,187
414-217	5,192,188
414-477	5,192,189
504-187	5,192,356
504-315	5,192,357
504-307	5,192,358
205-124	5,192,400
427-523	5,192,523
425-378	5,192,543
428-089	5,192,566
228-206	5,192,582
437-081	5,192,680
437-217	5,192,681
437-219	5,192,682
086-020	5,192,819
340-444	5,192,929
340-477	5,192,930
340-550	5,192,931
340-604	5,192,932
340-621	5,192,933
257-013	5,192,985
257-192	5,192,986
257-183	5,192,987
257-774	5,192,988
257-342	5,192,989
257-229	5,192,990
257-051	5,192,991
257-370	5,192,992
257-400	5,192,993
257-766	5,192,994
257-787	5,192,995
360-084	5,193,045
360-097	5,193,046
257-668	5,193,053

PATENTS

GRANTED MARCH 9, 1993

GENERAL AND MECHANICAL

5,191,658
OFFSET ZIPPER CLOSED WET SUIT
William R. Meistrell, Manhattan Beach, Calif., assignor to Dive N'Surf, Inc., Hermosa Beach, Calif.
Continuation of Ser. No. 694,095, May 1, 1991. This application Feb. 7, 1992, Ser. No. 832,326
The portion of the term of this patent subsequent to Sep. 5, 2006, has been disclaimed.
Int. Cl.[5] B63C *11/04*; A41D *27/00*
U.S. Cl. 2—2.1 R **4 Claims**



1. In a wet suit having a lower trunk portion, leg portions integral with said lower trunk portion, upper trunk and neck portions, first and second arm portions integral with said upper trunk and neck portions, and a waist portion between said upper and lower trunk portions, the wet suit consisting of resiliently stretchable elastomeric sheet material, the improvement comprising:

a) said upper trunk and neck portions including a first section integral with the first arm portion, and a second section integral with the second arm portion, the said sections defining a split that extends therebetween, downwardly and diagonally sidewardly at a rear side of the suit to terminate at a locus in sidewardly offset relation to a center of the waist portion,

b) means, including diagonally extending zipper structure on said sections to interconnect them along a length of the split, said means comprising zipper structure that extends from proximate a top of said neck portion above a mid-region of the suit downwardly and diagonally into proximity to said sidewardly offset locus, said zipper structure terminating generally above one of said leg portions,

c) a rear center of the suit being continuous and uninterruptedly stretchable from said lower trunk portion upwardly to a locus substantially above said waist portion,

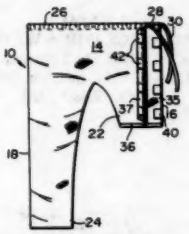
d) and means on at least one of the sections cooperating with the zipper structure to block leakage of water into the suit, said means including a protective and concealed flap at an inner side of the suit, and overlapping said zipper structure at the inner side thereof, said flap carried by said one section, said sections also including associated flaps extending adjacent said zipper structure at an outer side thereof, said zipper structure including one section confined between said concealed flap and one of said associated flaps, and another section confined between said concealed flap and another of said associated flaps,

d) the lower trunk portion of the suit being annularly continuous and stretchable, below the level of the split,

f) the zipper sections being non-stretchable.

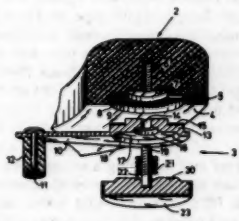
5,191,659
ORTHOPEDIC ACCESS PANTS
Darlene F. Backus, 6445 Gillis Dr., Jackson, Mich. 49201
Filed Jan. 23, 1992, Ser. No. 824,386
Int. Cl.[5] A41D *1/06*
U.S. Cl. 2—227 **3 Claims**

1. An orthopedic pant garment characterized by its ease of access to the wearer's leg and hip and modesty of wear comprising, in combination, a first panel portion, a second panel portion, said panel portions being the mirror image of each other and the general configuration, cut and fullness of said panel portions being identical so that either of said panel portions may constitute a front or a rear of the garment with respect to a wearer, an outer edge defined upon each of said panel portions, first and second leg portions defined on each of said panel portions, said outer edges defining outer edges of said leg portions, an upper edge defined on each of said panel portions, a belt loop defined in said panel portions upper edges, a drawstring located within said belt loop whereby said panel



portions are slidably mounted on said drawstring, a lower edge defined upon each of said leg portions, and releasable hook and loop fasteners spaced from each other located along at least one of said panel portions outer edges releasably interconnecting the adjacent outer edges of aligned leg portions so that said fasteners may be released to provide full access to the wearer's leg and limited leg access is available intermediate adjacent fasteners, the vertical distance between said panel portions upper and lower edges at said leg portions differing to define a full leg portion and a short leg portion, said fasteners being located at the outer edge of said short leg portion.

5,191,660
DEVICE FOR ATTACHING A TOILET ELEVATOR TO THE BOWL OF A TOILET
Kurt Francke, Tyresö , Sweden, assignor to Rfsu Rehab AB, Stockholm, Sweden
Filed Nov. 12, 1991, Ser. No. 789,877
Claims priority, application Sweden, Nov. 12, 1990, 90036039
Int. Cl.[5] A47K *13/00, 13/04*
U.S. Cl. 4—239 **12 Claims**



1. A device for detachably holding toilet seats (2) on the bowls of toilets or water closets (1), said device comprising a plurality elongate of arms (10, 38) adapted to be fitted to the underside (4) of the seat (2), said arms (10, 38) being pivotal about an axis and capable of being locked in selected pivotal positions, wherein one end of each respective arm is provided with a pin (11, 41) which depends there from at a generally right angle to the arm (10, 38), said pins (11, 41) being intended

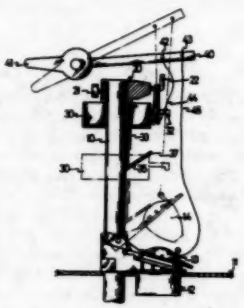
to rest against the outer surface of the rim of a toilet bowl when the seat (2) is placed in a position of use on said bowl, each of said arms (10, 38) having at its other end a circular disc-shaped part (13, 39) protruding therefrom having a centrally located aperture (14, 43) therethrough, said part (13, 39) adapted to being received in a complementary recess (8, 31) in the underside (4) of the seat (2); a stem of a screw (19, 45) extending through the central aperture (14, 43) for engaging a screw threaded part (6, 33) in the toilet seat (2) and defining said pivot axis, wherein tightening of the screw (19, 45), with a head (20, 46) of said screw engaging the lower surface of the disc-shaped part (13, 39), locks the arm (10, 38) in its adjusted position; and, mutually coacting engagement devices (9, 15) arranged on the mutually engaging surfaces of the recess (8, 31) and the circular, disc-shaped part (13, 39).

5,191,661

CONTROL DEVICE FOR A WATER TANK

Fong C. Chang, No. 72, Minli St., Taichung City, Taiwan

Filed Sep. 5, 1991, Ser. No. 755,431
Int. Cl.[5] E03D 3/12
U.S. Cl. 4—324 2 Claims



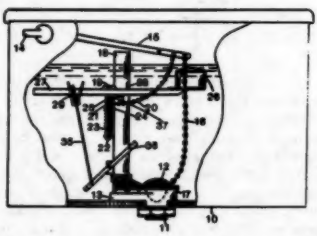
1. A control device for a water tank comprising an inlet pipe and an outlet pipe disposed in said water tank, a valve disposed on top of said outlet pipe, a block fixed on top of said inlet pipe, a hanger laterally extended from said block, a pawl having a middle portion rotatably supported on said hanger and having a hook formed in a first end thereof and including a second end, a first float slidably engaged on said inlet pipe and movable upward and downward along said inlet pipe, a catch laterally extended from said first float, a pusher extended downward from said first float and located above said valve and moving in concert with said first float, said valve being actuated by said pusher when said pusher and said first float move downward along said inlet pipe, said first float including an opening formed in a center thereof, said opening including a plurality of protrusions formed in one side surface thereof, said pusher including a plurality of holes formed therein for receiving said protrusions of said first float so that said pusher can be adjusted upward and downward relative to said first float, a lever having a middle portion pivotally supported in an upper portion of said water tank and having a knob formed in a first end thereof and including a second end which is movable upward when said knob is depressed downward, said knob being reachable from outside of said water tank, a first cable second end of said pawl so that, when said second end of said lever moves upward, said pawl can be caused to rotate from a first position to a second position where said hook of said pawl is located below said catch of said first float, and a second cable coupled between said valve and said second end of said lever so that said valve can be pulled open when said second end of said lever moves upward and so that water contained within said water tank can be discharged via said outlet pipe, said first float will be lowered when said water discharges out through said outlet pipe, said catch of said first float will be caught by said hook of said pawl when said first float moves downward and when said knob is depressed for a short period of time, so that said valve will move downward to close said outlet pipe after almost all of said water contained within said water tank has been discharged, and said catch of said first float will not be caught by said hook of said pawl when said knob is released right after depression operation thereof so that said first float may move downward along said inlet pipe and so that said valve can be caused to move downward in order to close said outlet pipe.

5,191,662

FLUSH LIMITING MECHANISM

John A. Sharrow, Apt. #307, 4050 W. Lake Sammamish Pkwy. NE., Redmond, Wash. 98052

Filed Jul. 24, 1992, Ser. No. 918,595
Int. Cl.[5] E03D 1/14
U.S. Cl. 4—325 9 Claims



1. A flush limiting mechanism for toilets having a tank with an outlet, an overflow pipe, a float type flapper valve pivotally mounted on said overflow pipe and having a portion thereof, positioned over said outlet, said flapper valve being controlled by a flush handle located externally of said tank which handle in turn controls the position of an internal flush lever which in turn is connected to said flapper valve, said flapper valve preventing the flow of water through the outlet until lifted by the action of said flush handle, at which time said flapper valve holds itself open, through the buoyant action of an integral float chamber, until the tank empties, the present invention allowing the user to select, at the time of initiating a flush, either a full duration flush or a water-saving limited duration flush, dictated by the length of time that said handle is depressed, which present invention is comprised of:

a float arm, pivotally mounted near its mid point to said stand pipe to one end of which float arm is attached a weighted float, which float arm pivots about said mount in response to the rise and fall of water present in the toilet tank, as a result of the action of said weighted float;

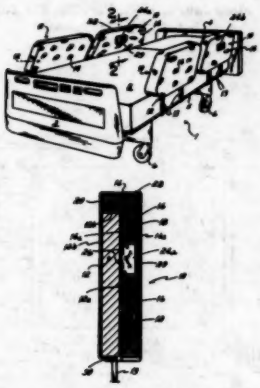
a flapper valve depressor, which is pivoted on said stand pipe and so positioned and aligned as to contact said flapper valve to effectively cause reseating and closure of the toilet tank outlet valve; a float arm coupler adjustably attached to an end of the pivotally mounted float arm opposite said one end, an actuator rod pivotally attached at one end to said arm coupler and at another end to the flapper valve depressor in such a manner that the position of said float determines the respective position of said flapper valve depressor, the settings of which adjustable float arm coupler determine the initial position of said flapper valve depressor and also the rate of movement of said flapper valve depressor relative to the rate of movement of said float, said adjustable float arm coupler adjustably clamps to said pivotally mounted float arm at the end opposite said float and adjustably clamps to the actuator rod.

5,191,663

HOSPITAL BED SIDEGUARD PADS

Frederick J. Holder, Shelbyville, Ind.; John W. Lannen, Salem, Va., and Raymond H. Grote, Hamilton, Ohio, assignors to Hill-Rom Company, Inc., Batesville, Ind.

Filed Jul. 2, 1992, Ser. No. 907,654
Int. Cl.[5] A47C *21/08*
U.S. Cl. 5—424 6 Claims



1. A sideguard pad for use in conjunction with a hospital bed having sideguards comprising:

a slipcover defining first and second compartments, said first compartment adapted to be placed over, around and secured to a hospital bed sideguard;

a foam pad disposed in said second compartment, said foam pad having a planar slab portion and an upper lip portion, said planar slab portion adapted to substantially cover an inboard vertical plane of the sideguard, said lip portion adapted to cover an upper edge of the sideguard;

means for selectively opening and closing said second compartment for facilitating removal and insertion of said foam pad into said second compartment of said slipcover; and

means for securing said first compartment of said slipcover to the sideguard; said sideguard pad further including an aperture in at least one side of said sideguard pad for providing access to hospital bed controls mounted on the sideguard.

5,191,664

WATERBED SHEET SECURING CLIP

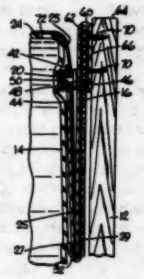
Kent E. Wyatt, 1003 Longview Dr., #29, Rogers, Ark. 72756

Filed Apr. 21, 1992, Ser. No. 862,408
Int. Cl.[5] A47C *21/02*
U.S. Cl. 5—498 5 Claims

1. A device for holding bedding neatly in place on a waterbed, the waterbed having a fluid-filled mattress supported within a frame structure which is lined with a waterproof plastic liner for preventing fluid from leaking out of the waterbed if the fluid-filled mattress begins leaking, said device comprising:

fastening means for gripping an edge portion of bedding for a waterbed; and

means for positioning said fastener means at a location below the top surface of the fluid-filled mattress between the mattress and the waterbed liner, said positioning means being secured to the frame structure without piercing the waterproof plastic liner, said means for positioning further including flexible elastic means for elastically stretching



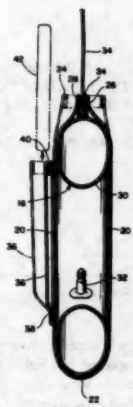
when waterbed bedding gripped by said fastener means is pulled.

5,191,665

INFLATABLE CUSHION

Michael E. Breedlove, 7918 County Rd. #2, Howey-in-the-Hills, Fla. 34737

Filed Apr. 9, 1991, Ser. No. 682,312
Int. Cl.[5] A47C *27/00*
U.S. Cl. 5—656 1 Claim



1. An inflatable seat cushion comprising an outer cover consisting of a pair of substantially circular panels constructed of flexible, fabric-like material, means securing a major portion of the periphery of the panels together to form an outer cover with substantially less than one-half of the periphery of the panels being openable, closure means for the openable portion of the periphery of the panels, an inflatable annular tube positioned interiorly of the outer cover with the openable portion of the periphery of the panels enabling insertion and removal of the inflatable tube and a shoulder strap attached to said outer cover to form a support for the cushion when transporting to a point of use, said shoulder strap being an elongated flexible strap of wedging material having the ends thereof secured to the periphery of the panels adjacent the ends of the openable portion of the periphery, said shoulder strap having a length to enable it to encircle and be anchored to a seat, a pocket forming panel secured to the exterior surface of one of said cover forming panels, said pocket forming panel being of rectangular construction and secured to the cover forming panel by stitching along three sides thus forming a pocket having an open side

which faces the openable portion of the periphery of the cover forming panels to enable the open side of the pocket to face upwardly when the cushion is supported by the shoulder, strap a heating unit removably positioned in the pocket to form a warm surface upon which to set, said annular tube including an inflation and deflation valve extending into a central open area of the tube in spaced relation to the cover forming panels, said pocket forming panel being centrally located on said one cover forming panel, said pocket forming panel being aligned with the central open area of the tube, said inflatable tube and cover forming panels being dimensioned such that the cover forming panels will be maintained generally parallel and taut by the inflated tube, the openable portion of the periphery of the cover forming panels being defined by a portion of the peripheral edge of each cover forming panel projecting laterally outwardly to form an openable entrance with the inner surfaces of the laterally projecting edge portions of the cover forming panels facing inwardly, said closure means including hook and loop pile fasteners on the opposing surfaces of the laterally projecting edge portions of the cover forming panels, said shoulder strap having the ends thereof mounted immediately adjacent the ends of the laterally projecting edge portions of the cover forming panels.

5,191,666

DRILL ADAPTER

Linn N. Corbin, 2325 Bishop Estates Rd., Jacksonville, Fla. 32259

Filed Jul. 24, 1991, Ser. No. 735,041
Int. Cl.[5] B25F *1/00*
U.S. Cl. 7—158 **20 Claims**

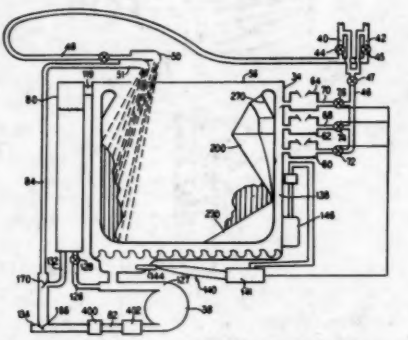
1. A drill adapter for rapid conversion of a drill having a chuck with equally spaced keyholes and a drill bit clamped therein to a power tool having a different tool bit, said adapter comprising an elongated tubular body having a longitudinal axis and a rearwardly opening hollow adapted to receive the chuck and the drill bit, said body having an elongated tubular nose extending forwardly therefrom with the forward end of said nose having a recess for receiving a tool bit in operational engagement, said body having a plurality of detents carried by said body and being equally spaced from each other about said hollow, each of said detents being movable radially of said longitudinal axis, said adapter including spring means engaging each of said detents for biasing said detents inwardly to extend into said hollow and to engage respective keyholes in the chuck, said detents respectively being engaged with the keyholes of the chuck and being adapted to cause rotation of said adapter with rotation of the chuck in either direction of rotation, said each of said detents having a camming surface generally aligned with said longitudinal axis, said adapter being removed from the chuck by a pulling force away from the chuck along said longitudinal axis whereby said camming surfaces move said detents against the bias of said spring means to release said detents from engagement with the keyholes in the chuck.

5,191,667

METHOD OF WASHING FABRIC ARTICLES IN A VERTICAL AXIS WASHER

Phalguni S. Roy, St. Joseph Township, Berrien County; Jim J. Pastryk, Weesaw Township, Berrien County; Sheryl L. Farrington, Lincoln Township, Berrien County; Devinder Singh; John W. Euler, both of St. Joseph; Anthony H. Hardaway, Lincoln Township, Berrien County, and Mark B. Kovich, St. Joseph Township, Berrien County, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jan. 2, 1992, Ser. No. 816,166
Int. Cl.[5] D06F *21/08*
U.S. Cl. 8—158 **22 Claims**



15. A method of washing a fabric wash load in an automatic washer having a wash basket rotatable about a vertical axis and charged with a detergent liquor comprising the steps:

(1) rotating said wash basket about its vertical axis at a predetermined speed, wherein said fabric wash load and said detergent liquor travel up a side wall of said wash basket;

(2) periodically decelerating said wash basket, wherein said fabric wash load and said detergent liquor continue to rotate upon deceleration;

(3) impinging said fabric wash load on structures in said wash basket as said fabric wash load continues to rotate along said wash basket upon deceleration of said wash basket, thus causing said fabric to move upwardly and inwardly of said wash basket; and

(4) repeating steps 1–3 a predetermined number of times.

5,191,668

SPIN METHOD OF RINSING FABRIC IN A HORIZONTAL AXIS WASHER

John W. Euler, St. Joseph; Mark B. Kovich, St. Joseph Township, Berrien County; Sheryl L. Farrington, Lincoln Township, Berrien County; Jim J. Pastryk, Weesaw Township, Berrien County; Jeanne C. Van Newenhizen, Benton Township, Berrien County, and Anthony H. Hardaway, Lincoln Township, Berrien County, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jan. 2, 1992, Ser. No. 815,784
Int. Cl.[5] D06B *1/02*; D06F *23/02*
U.S. Cl. 8—158 **16 Claims**

1. A method of rinsing fabric in a washer having a wash chamber rotatable about a horizontal axis comprising the steps:

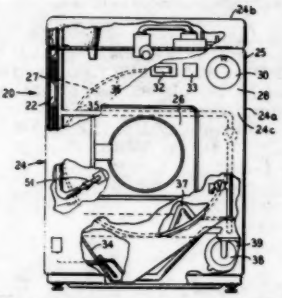
loading fabric to be washed into the wash chamber of said washer;

washing said fabric in a detergent solution while rotating said wash chamber about its horizontal axis for a first period of time;

draining said detergent solution from said wash chamber subsequent to said first period of time;

rinsing said fabric by adding water to said wash chamber and

spraying said rinse water onto said fabric while spinning said wash chamber at a speed to effect more than a one gravity centrifugal force on said fabric such that said



fabric will not tumble within said wash chamber as it spins;

draining said wash chamber of said rinse water.

5,191,669

SPIN METHOD OF WASHING FABRIC IN A HORIZONTAL AXIS WASHER

John W. Euler; Mark B. Kovich, both of St. Joseph; Jim J. Pastryk, Weesaw Township; Sheryl L. Farrington, and Anthony H. Hardaway, both of Lincoln Township, Berrian County, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jan. 2, 1992, Ser. No. 815,774

Int. Cl.[5] D06F *21/04*

U.S. Cl. 8—158 **17 Claims**

500 LOAD FABRIC INTO WASH ZONE
502 LOAD DETERGENT INTO DETERGENT DISPENSER
504 SELECT CYCLE AND TEMPERATURE
506 PUMP DETERGENT AND FRESH WATER INTO DISPENSING TANK AND THOROUGHLY MIX DETERGENT
508 APPLY CONCENTRATED DETERGENT SOLUTION TO TUMBLING WASH LOAD WITH RECIRCULATION
510 SPIN WASH LOAD ABOVE ONE GRAVITY CENTRIFUGAL FORCE AND RECIRCULATE CONCENTRATED DETERGENT
512 FILL WASH ZONE WITH WATER
514 TUMBLE WASH
516 DRAIN BASKET AND DISPENSERS

1. A method of washing fabric in a washer having a wash chamber rotatable about a horizontal axis comprising the steps:

rotating said wash chamber about its horizontal axis at a spin speed to effect less than a one gravity centrifugal force on said fabric such that said fabric will tumble in said wash chamber;

directing a recirculating spray of concentrated detergent solution onto said fabric for a first period of time as said fabric is tumbling in said wash chamber;

subsequently increasing the spin speed of said wash chamber to effect more than a one gravity centrifugal force on said fabric such that said fabric will be retained on the wall of said wash chamber as it spins;

continuing said recirculating spray of concentrated detergent solution onto said fabric for a second period of time as said fabric is held against the wall of said wash chamber;

after said second period of time, diluting said concentrated detergent solution and slowing said spin speed of said wash chamber to effect less than a one gravity centrifugal force on said fabric such that said fabric will again tumble in said wash chamber;

continuing said recirculating spray of diluted detergent solution onto said fabric for a third period of time as said fabric is tumbling in said wash chamber; and

draining the diluted detergent solution from said wash chamber.

5,191,670

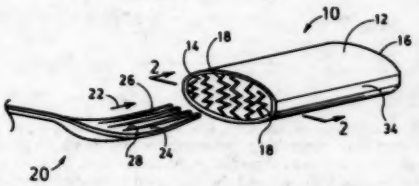
FORK SCRUBBER

Ron W. Lake, 1550 Connoley Ave., Chula Vista, Calif. 91911, and Debra Green, 1032 S. Windy Ridge Ct., Anaheim Hills, Calif. 92808

Filed Dec. 30, 1991, Ser. No. 815,820

Int. Cl.[5] A46B *3/00, 9/02;* A47L *21/00*

U.S. Cl. 15—160 **24 Claims**



1. A fork scrubber comprising:

a tube having first an second opposing interior walls; and

a plurality of substantially parallel zigzag bristles mounted to the first wall and having free ends extending toward the second wall, said zigzag bristles each having a plurality of segments connected by sharp vertex points.

5,191,671

TOOTHBRUSH HANDLE

Martin E. Rudnick, 2353 Rupert Dr., San Jose, Calif. 95124

Filed Aug. 22, 1991, Ser. No. 748,597

Int. Cl.[5] A46B *05/02*

U.S. Cl. 15—167.1 **10 Claims**

1. A toothbrush comprising:

a. an elongated handle having a proximal end and a distal end, and a longitudinal axis extending therebetween, the handle comprising:

a transverse cross section adjacent said proximal end in the shape of a trapezoid, wherein said trapezoid comprises a bottom edge, a top edge, and side edges extending from said bottom edge to said top edge, said top edge being smaller than said bottom edge, and

a second transverse cross section adjacent said distal end in the shape of a second trapezoid, said second trapezoid comprising a second bottom edge, a second top edge, and second side edges extending from said second bottom edge to said second top edge, said second top edge being smaller than said second bottom edge,

wherein said second top edge is smaller than said top edge, and said second bottom edge is smaller than said bottom edge, whereby said handle tapers in width from said proximal end to said distal end;

b. a head attached to the distal end of said handle, said head having a top side and a bottom side, said top side being contiguous with said second top edge, and said bottom side being continuous with said second bottom edge;

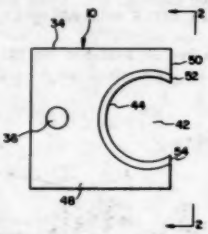
c. a plurality of bristle tufts attached to the top side of said head.

5,191,672

CLEANING DEVICE FOR A THREADED SHAFT

William A. Boston; Frank A. Balow, both of Western Springs, and Eugene Skipor, Hickory Hills, all of Ill., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 19, 1991, Ser. No. 747,304
Int. Cl.[5] B21C *43/00*
U.S. Cl. 15—256.5 13 Claims



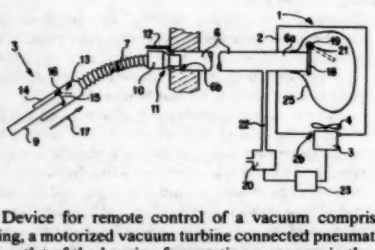
1. A cleaning device for a threaded shaft having a pair of opposed ends comprising a cleaning member having a predetermined width and a threaded recess received on the shaft and extending partially around the shaft, with the threads of the cleaning member meshing with the threads of the shaft, said cleaning member extending only partially around the shaft throughout the width of the cleaning member such that the cleaning member may be snap-fit onto the shaft intermediate the ends of the shaft, said cleaning member having a cut-out to receive the shaft, a pair of spaced opposed edges adjacent and on opposite sides of said cut-out, with the edges being spaced a distance slightly less than the diameter of the shaft, with the cleaning member being constructed from a resilient material, such that the edges flex slightly when the cleaning member is placed on the shaft such that the cleaning member is snap-fit onto the shaft.

5,191,673

REMOTE CONTROL DEVICE VACUUM OR VENTILATION SYSTEM

Patrick Damizet, Venissieux, France, assignor to Aldes Aeraulique and Societe d'Etudes et de Recherche de Ventilation et d'Aeraulique S.E.R.V.A., Bussy Saint Georges, France

Filed May 23, 1990, Ser. No. 527,372
Claims priority, application France, May 23, 1989, 89 06974
Int. Cl.[5] A47L *5/38*
U.S. Cl. 15—314 24 Claims



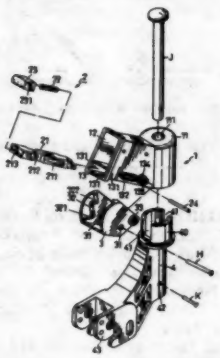
1. Device for remote control of a vacuum comprising a housing, a motorized vacuum turbine connected pneumatically to an outlet of the housing for creating a vacuum in the housing, and at least one tube with a downstream end which terminates in the housing, means connected to an upstream end of the tube for generating a single pneumatic pressure pulse in the direction of said downstream end, said downstream end being associated with means for detecting the pneumatic pressure pulse and acting on an electric motor of the vacuum turbine to start the motor, the pneumatic pressure pulse being conducted by the tube from said upstream end to said downstream end, said downstream end being provided with a shutoff flap normally held in the closed position and capable of opening under the influence of vacuum created in housing.

5,191,674

DIRECTION SETTING DEVICE FOR A STROLLER

Hong-Fu Zun, No. 59, Alley 85, Lane 673, Chung-Chen Rd., Jen-Te Hsiang, Tainan Hsien, Taiwan

Filed Feb. 6, 1992, Ser. No. 831,843
Int. Cl.[5] B60B *33/00*
U.S. Cl. 16—35 R 4 Claims



1. A direction setting device for a roller of a stroller, including a first connector adapted to be connected to a leg which supports a seat of said stroller, said first connector having a tubular member and a housing extending at an incline from said tubular member and in communication with the same, said housing confining a receiving space;

a second connector adapted to be connected to said roller of said stroller and having a tubular top portion with a control notch rotatably and slidably connected to said first connector;

a spring biased key member movably provided in said receiving space of said housing, which key member is biased to extend into said control notch of said second connector to prevent rotation of said second connector relative to said first connector:

characterized in that said housing includes two aligned first elongated slots;

said spring biased key member has a second elongated through slot therethrough and a through-hole adjacent to said second elongated through slot;

a control member includes a plate which is provided on said housing, and has an inner surface with a control groove formed therein, which inner surface abuts against said housing, said control groove including a first trough, a second trough deeper than said first trough and a ridge between said first and second troughs;

a first pin member pivotally connects said plate to said housing and passes through said second elongated through a slot of said key member;

a second pin member passes through said through-hole of said key member and said first elongated slots of said housing with one free end of said second pin member extending into said second trough of said plate; and

said second pin member being movable in said control groove of said plate between a first position in said second trough where said key member extends into said control notch, preventing the rotation of said second connector relative to said first connector, and a second position in

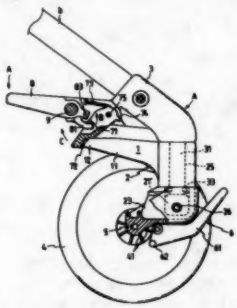
said first trough where said key member retracts from said control notch permitting the rotation of said second connector relative to said first connector.

5,191,675

CASTER MECHANISM FOR CARRIAGE

Takashi Ishikura, Tokyo, Japan, assignor to Combi Corporation, Tokyo, Japan

Filed Aug. 27, 1991, Ser. No. 750,688
Claims priority, application Japan, Sep. 27, 1990, 2-100204[U]
Int. Cl.[5] B60B *33/00*
U.S. Cl. 16—35 R **22 Claims**



1. A caster mechanism adapted for use with a carriage having a plurality of wheels and a foot rod coupled to each wheel, said caster mechanism comprising:

a stopper mechanism fixedly secured to each foot rod of said carriage; and

a wheel support mechanism rotatably positioned below said stopper mechanism, said wheel support mechanism including an engagement bracket extending parallel to said stopper mechanism, said engagement bracket having an arm plate and an engagement fitting portion formed at a first end of said arm plate,

wherein said stopper mechanism comprises a base plate, an actuating lever coupled to a first end of said base plate and adapted to turn upwardly and downwardly about an end thereof, and an engagement member adapted to turn up and down in operative association with said actuating lever and positioned below said first end of said base plate to selectively engage said engagement fitting portion, said engagement member and said engagement fitting portion simultaneously being engaged or disengaged together such that said wheel either is selectively fixed in a predetermined orientation or is steerable,

said caster mechanism further comprising a rod positioned on said engagement member; and

means for selectively engaging and disengaging said rod, said engaging means being formed on said actuating lever.

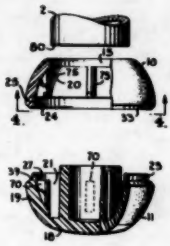
5,191,676

SPLIT HEMISPHERE FOOT WITH COOPERATING SNAP-OVER RETAINING LIPS

James L. Gerner, Shawnee, Kans., assignor to Fixtures Manufacturing Corporation, Kansas City, Mo.

Filed Dec. 13, 1991, Ser. No. 808,102
Int. Cl.[5] A47B *91/06*
U.S. Cl. 16—42 T **17 Claims**

1. In a glide for a structural leg comprising a first portion, a second portion and means for securing said glide to said leg, the improvement comprising:



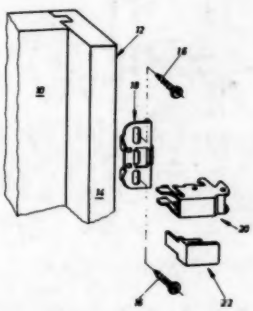
(a) cooperating interference means on said first portion and said second portion for interferingly securing said first portion to said second portion.

5,191,677

CABINET HINGE

Horst Lautenschläger, Reinheim, and Gerhard W. Lautenschläger, Brensbach, both of Fed. Rep. of Germany, assignors to Karl Lautenschlager GmbH & Co. KG, Reinheim, Fed. Rep. of Germany

Filed Sep. 12, 1991, Ser. No. 758,745
Claims priority, application Fed. Rep. of Germany, Oct. 4, 1990, 4031305
Int. Cl.[5] E05D *7/10, 11/00*
U.S. Cl. 16—257 **18 Claims**



1. Hinge for hanging a door on the carcase of a piece of furniture, having a door-related part which can be fastened to the door and a carcase-related part which is coupled by a linkage mechanism to the door-related part and removably fastened on a mounting plate which can be fastened to the carcase and a supporting arm straddling the mounting plate with an inverted U-shaped cross-section, which is releasably joined by a catch mechanism to the mounting plate and has in each bottom edge of its lateral flanges, in their front end portion nearer the door, open-mouthed, hook-like hanging notches which can be hooked on associated corner portions in the area of the mounting plate nearer the door, while at the carcase-interior end of the supporting arm remote from the door two resiliently flexible tongues each with a hook are formed, which in the intended joining position are in form-fitting engagement each with a notch at the carcase-interior end portion of the mounting plate, the hooks and the notches being able to be brought out of engagement by contrary bending of the tongues together parallel to the supporting wall surface, and each tongue having a handle accessible in the locked position of the supporting arm on the mounting plate for exerting a pressure directed one against the other parallel to the

supporting wall surface, said resiliently flexible tongues (52) being pointed at the mounting plate, beginning from the web (38) of the supporting arm (20) at right angles to the fastening surface of the mounting plate (18) on the cabinet carcase, and being provided at their free ends with the hooks (54*a*; 54*b*), and said mounting plate (18) having in its front end portion facing the door a projection (28) reaching between the lateral flanges (40) of the installed supporting arm, whose lateral edges (28*a*; 28*b*) facing the flanges run at an angle from the free end toward the mounting plate, the distance between the sloping edges (28*a*; 28*b*) measured at the free end of the projection (28) being less than, and the distance of the two sloping edges from one another, measured in the area of transition to the mounting plate, being substantially equal to the clear distance between the lateral flanges (40) of the supporting arm.

5,191,678

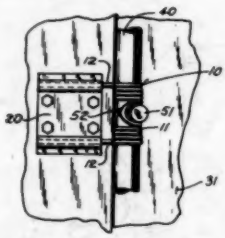
WIND RESISTANT DOOR HARDWARE

Harold A. Firari, Wauwatosa, Wis., assignor to T.J. Firari Enterprises, Milwaukee, Wis.

Continuation-in-part of Ser. No. 428,722, Oct. 30, 1989, abandoned. This application Jun. 10, 1991, Ser. No. 711,722

Int. Cl.[5] E05F *1/08*

U.S. Cl. 16—305 **14 Claims**



1. A spring loaded hinge for a door having a door frame comprising:

a generally vertical rod that moves with said door as said door pivots;

a first collar means for holding said rod to said door;

a second collar means for holding said rod to said door frame;

at least one spring means attached to said rod at various intervals;

moving means for moving said spring means with said rod;

said rod extending substantially from the top of said door to the bottom of said door;

said moving means being attached to said rod at generally the same said intervals of said spring means;

each said spring means having a portion in contact with said moving means;

each said spring means having a free end;

each said free end of each said spring means being oriented in a direction such that as said door opens said portion of each said spring means causing said free end of said spring means to move as said vertical rod rotates such that as said door opens each said free end of each said spring means contacts said door frame when said door is nearly fully opened and thereafter applies increasing force to said rod through said moving means eventually preventing rotation of said rod whereby said door is prevented from being opened any further.

5,191,679

DISPLACEABLE HINGE

James B. Harper, Plaza Luna 1, Lomas Pueblo, Marbella, Malaga, Spain

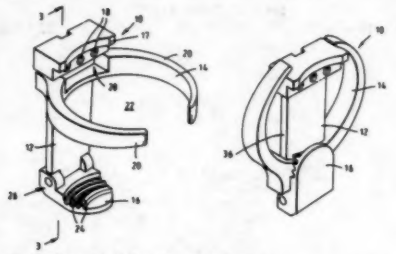
PCT No. PCT/GB89/01358 § 371 Date May 20, 1991 § 102(e) Date May 20, 1991; PCT Pub. No. WO90105473 PCT Pub. Date May 31, 1990

PCT Filed Nov. 16, 1989, Ser. No. 689,768

Claims priority, application United Kingdom, Nov. 18, 1988, 8827063

Int. Cl.[5] F05D *7/00*; A47K *1/09*

U.S. Cl. 16—363 **6 Claims**



1. A displaceable hinge comprising:

an elongate first member having a pair of opposite side faces extending along its length and pair of opposite end faces extending along its length;

a second member which has an aperture therethrough, said aperture being bounded by two side portions and two end portions, each of said end portions including a pair of intersecting channels, which separate ends of said pair of side portions from an end protrusion extending from a respective one of said end portions;

at least one of said first and second members being resiliently deformable;

said first member passing through said aperture in said second member such that said end faces of said first member are always in abutment with said end portions of said second member; and

said second member being displaceable relatively to said first member along the length of said first member, and being pivotable relatively to said first member at any location selected at random along the length of said first member between a first position in which said second member lies perpendicularly to said first member and a second position in which said second member lies parallel to said first member;

wherein resilient deformation of at least one of said first and second members allows said end faces of said first member and said end protrusions of said second member to snap past one another during pivoting of said second member relative to said first member.

5,191,680

FILAMENT THREADING IN AN AIR GUN FOR PRODUCING NONWOVEN FABRICS

Akira Kaneko; Nobuo Higashiya, and Hiroyuki Hamasuna, all of Kuga, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Aug. 22, 1991, Ser. No. 748,806

Claims priority, application Japan, Aug. 27, 1990, 2-224753

Int. Cl.[5] D01G *25/00*

U.S. Cl. 19—299 **13 Claims**

1. An air gun for producing nonwoven fabrics having means for facilitating threading of a filament in said gun, comprising:

(l) a first nozzle having a air gun inlet for receiving a filament delivered from a spinning nozzle, including:

(a) a tapered pipeline provided in an interior of said air gun inlet and reduced in diameter up to a middle portion thereof, and

(b) a first generally straight pipeline provided in the interior of said air gun inlet, having said same diameter from

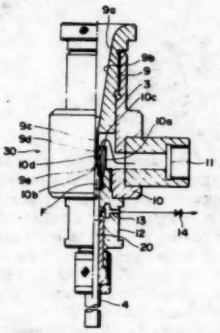
the middle portion to an extreme end forming the filament outlet,

(II) a second nozzle connected to said first nozzle and including;

(a) a blow port encircling a periphery of the extreme end of the first generally straight pipeline, an inner surface of the blow port being gradually reduced in diameter from a blow port air inlet side and then gradually increased in diameter downstream a maximum constriction portion thereof and then forms a second generally straight pipeline having a slightly larger diameter than that of the filament outlet, and

(b) a slight clearance formed between the inner surface of said blow port and an outer surface of said extreme end of said first generally straight pipeline,

(III) a compressed air inlet communicated with the blow port air inlet of the blow port, and air introduced into the blow port from a compressed air inlet increases in flow velocity to a maximum at a time passing through the



maximum constriction portion having the minimum inside diameter whereby air is jetted from the compressed air blow port so as to draw the filament,

(IV) a connection pipe connected to the second nozzle in a direction downstream of the maximum constriction portion,

(V) an accelerating pipe connected to said connection pipe for guiding the filament,

(VI) a carrier path extending through the first nozzle, second nozzle, the connection pipe and the accelerating pipe from the air gun inlet of the first nozzle and having an air flow for transmitting said filament received in said air gun inlet, said filament delivered thereafter and adapted to form said nonwoven fabric, and

(VII) an exhaust path branched off from said carrier path on the downstream side from said compressed air blow port for removing a part of the air flowing in the carrier path, and having opening and closing means for facilitating threading of the filament in the carrier path.

5,191,681

NAPKIN- OR DRAPE-HOLDER

Oddvin Lokken, 131 Forest Ave., Rye, N.Y. 10580

Filed Mar. 11, 1992, Ser. No. 849,486

Int. Cl.[5] A45F *5/00*

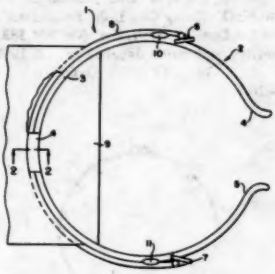
U.S. Cl. 24—9 **4 Claims**

1. A napkin- or drape holder in the form of a one-piece molding, comprising:

a) a spring-like first plastic member having a body portion terminating in opposed proximal ends, said body portion being shaped to fit around the human neck;

b) a spring-like second plastic member having a body portion terminating in free ends, each of said free ends being connected to said body portion of said first member by integral plastic hinge means;

c) said first and second members having a normally open position in which said members lie in planes oblique to one another and a closed position in which said members are coplanar, said members being swingable about said hinge means between said positions;



d) said members being operable when in said closed position to clamp a napkin in place inserted between said body portions of said members; and

e) integral plastic locking means carried by one of said members for releasably locking said members in said closed position.

5,191,682

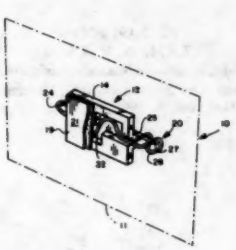
APPARATUS FOR PROVIDING A BADGE FINDING

Beverly J. Davis-Reardon, Addison; Elizabeth M. Gomez, Wood Dale, and Andru J. Ryniec, Addison, all of Ill., assignors to Ambrit, Inc., Elk Grove, Ill.

Filed Jan. 15, 1991, Ser. No. 641,186

Int. Cl.[5] A44C *3/00*

U.S. Cl. 24—13 **6 Claims**



1. A badge finding for attachment to a display article including a badge, comprising:

a backer body having opposed sides with a cavity in one side,

walls in said body defining the cavity,

a locking pin of one piece wire having a central body portion and a coil at one end, and a hook at an opposite end of the central body portion,

a free end on the locking pin for piercing clothing and for locking engagement with the hook,

a cover for covering the cavity in the body and prohibiting the central body portion of the pin within the cavity from removal from the cavity,

a first adhesive layer on one side of the cover adhering the cover to the side of the body to cover the cavity and the central body portion of the pin therein,

a second adhesive layer on the other side of the cover for later affixing of the badge finding to the display article,

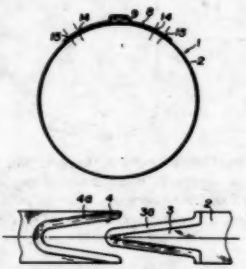
and a liner adhesively secured to the second adhesive layer

and peelable therefrom to expose the second adhesive layer at the time of affixing the badge finding to the display article.

5,191,683
HOSE BAND

Juji Ojima, Aikawa, and Isao Hino, Komagane, both of Japan, assignors to NHK Spring Co., Ltd., Yokohama, Japan

Filed Dec. 10, 1991, Ser. No. 804,583
Claims priority, application Japan, Dec. 12, 1990, 2-410475
Int. Cl.[5] B65D *63/00*
U.S. Cl. 24—20 R **2 Claims**



1. A hose band comprising an elongated ring band member having separated ends, each said end being fixed to a clamping ear member, a first of said ends comprising a tongue portion and a second of said ends comprising a tongue receiving portion, each said end comprising at least one bevelled surface becoming thinner toward an outside edge thereof and disposed in corresponding positions for engaging together in clamped position of said ring band member.

5,191,684
CLAMP STRUCTURE

Eric T. Kenwright, Creemore, Canada, assignor to Hans Oetiker AG Maschinen- und Apparatefabrik, Horgen, Switzerland

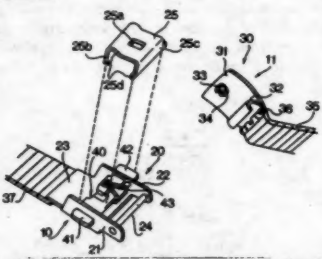
Filed Nov. 8, 1991, Ser. No. 789,671
Int. Cl.[5] B65D *63/00*
U.S. Cl. 24—20 R **33 Claims**

1. An open clamp structure with a clamping band means having overlapping inner and outer band portions which are adapted to be mechanically interconnected by the use of at least one hook-like means in one band portion operable to engage in a hook-receiving means in the other band portion, and which includes means enabling tightening of the clamp structure about an object to be fastened thereby, characterized in that the means enabling tightening of the clamp structure includes means for preventing over-torquing of the clamping band means in the presence of continuing tightening forces by positively limiting further relative movement between the inner and outer band portions of the clamp structure.

5,191,685
BUCKLE FOR WATCH BANDS

Yasushi Aoki, Saitama; Masaaki Azuma, Tokyo; Shigeo Tsuchigane, Saitama; Akihiro Tanaka; Katsuzo Hirayama, both of Tokyo, and Eiichiro Tanaka, Saitama, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan
Tokyo, and Eiichiro Tanaka, Saitama; Hidehumi Kasai, Tokyo, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

PCT No. PCT/JP89/00383, § 371 Date Jan. 25, 1990, § 102(e) Date Jan. 25, 1990, PCT Pub. No. WO89/11232, PCT Pub. Date Nov. 30, 1989
PCT Filed Apr. 10, 1989, Ser. No. 459,832
Claims priority, application Japan, May 27, 1988, 63-70155[U]; Jan. 6, 1989, 1-352[U]
Int. Cl.[5] A44C *5/20*
U.S. Cl. 24—656 **8 Claims**



1. A buckle for a watch with opposite bands, the buckle having a first engaging member and a second engaging member, the first engaging member comprising a frame member having at least one base frame and a pair of side frames, each of the side frames having a hole, the holes correspond to one another with both holes being located at the same height int he side frames, a lock lever having a locking portion, and a pressing-up lever having a body and a pressing-up slant on the body, each of the levers being laterally slidable relative to the side frames and being mounted in the frame member and having an operating lug projected form the hole of one of the side frames, and the second engaging member comprising a lock member engageable with the lock lever and a slant member to be raised by the pressing-up lever, a spring being provided between the lock lever and the pressing-up lever so as to urge outwardly both of the levers characterized in that

the pressing-up lever is located lower than the lock lever, and

the locking portion of the lock lever and the body of the pressing-up lever are disposed so as to overlap with each other, and a surface of the operating lug of one of the levers is located higher than the body by a height substantially equal to a thickness of the locking portion so that the operating lug is inserted into the corresponding hole.

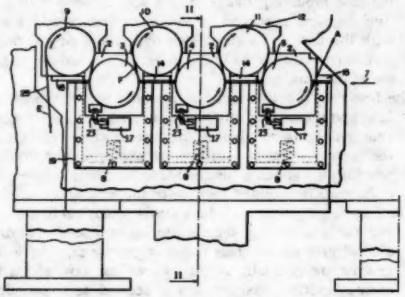
5,191,686
APPARATUS FOR PROTECTING STRETCHING ROLLERS IN SYNTHETIC FILM STRETCHERS

Hans-Juergen Maierhofer, Lindau; Willi Eberle, Wangen, and Adolf Mueller, Weissensberg, all of Fed. Rep. of Germany, assignors to Lindauer Dornier GmbH, Lindau, Fed. Rep. of Germany

Filed Feb. 13, 1991, Ser. No. 654,832
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1990, 4004696
Int. Cl.[5] D06C *3/06*
U.S. Cl. 26—71 **7 Claims**

1. An apparatus for protecting stretching rollers in a lengthwise stretching machine for synthetic film webs, comprising a machine frame, a first group of stretching rollers mounted in said machine frame, a second group of stretching rollers also mounted in said machine frame in such a position relative to said first group of rollers that a film web to be stretched must loop partially around all rollers of both groups, mounting

means for movably mounting one of said roller groups for movement relative to the other roller group, stop means (14, 15) in said machine frame for limiting a movement of said one roller group in a first direction toward the other roller group, said mounting means for said one roller group comprising force generating means (8) for pressing said one roller group in said first direction against said stop means (14, 15) for maintaining an operative relationship between said roller groups, electrical limit switch means arranged for sensing a movement of said one roller group away from said stop means in a second direction opposite to said first direction to provide an electrical signal for stopping said machine when at least one roller of said



one roller group moves away from said other roller group to an extent determined by said electrical limit switch means, and wherein each of said force generating means (8) is arranged in a space (20) formed between a first and a second guide plate (18, 19), said mounting means comprising a bearing plate (21) connected to said machine frame (13) and to said first and second guide plates, a bearing slider (22) slideably received in said space (20), said bearing slider (22) having one end operatively connected with said force generating means, said bearing slider being slideably held between said first and second guide plates (18, 19), said bearing slider having its other end rigidly connected with a bearing housing (1, 2) of said one group of rollers.

5,191,687

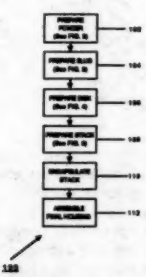
PROCESS FOR MAKING PIEZOELECTRIC STACKS

Chuong Q. Dam, Peoria; Virgil R. Hester, Delevan; Kurtis C. Kelley, Washington, and Carey A. Towe, Peoria, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Sep. 28, 1990, Ser. No. 589,853

Int. Cl.[5] H04R *17/00*

U.S. Cl. 29—25.35 **9 Claims**



1. A method for making piezoelectric solid state motor stack disks without post cutting lapping of the disks, comprising the steps of:

preparing a piezoelectric ceramic powder;

preparing a substantially cylindrical piezoelectric ceramic slug having an axial length greater than its diameter from said powder, by:

(1) pressing said ceramic powder to form said ceramic slug; and

(2) thereafter, heating said ceramic slug substantially above room temperature to cure it; and

cutting said slug substantially at right angles to its axial length into finished disks of predetermined thickness using an ID saw, without subsequent post-cutting lapping of the disks, wherein said disks of predetermined thickness are superior for use in the piezoelectric solid state motor stack than conventional lapped disks.

5,191,688

METHOD FOR PRODUCING A SUPERIOR LONGITUDINAL VIBRATOR

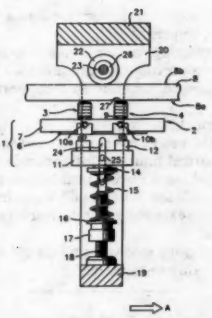
Hiroyuki Takizawa; Sumio Kawai, both of Hachioji, and Sadayuki Ueha, Machida, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Division of Ser. No. 558,826, Jul. 26, 1990, Pat. No. 5,136,200. This application Dec. 12, 1991, Ser. No. 806,167

Claims priority, application Japan, Jul. 27, 1989, 1-195767; Nov. 28, 1989, 1-310011; Dec. 21, 1989, 1-332155; Mar. 27, 1990, 2-79800; Apr. 10, 1990, 2-95399; Apr. 20, 1990, 2-104589; Apr. 27, 1990, 2-113683; May 18, 1990, 2-128852

Int. Cl.[5] H01L *41/22*

U.S. Cl. 29—25.35 **9 Claims**



1. A method for producing a superior longitudinal vibrator comprising the steps of:

providing a plurality of piezoelectric ceramic sheets of substantially uniform thickness length and width;

coating at least one major surface of each ceramic sheet with a conductive material;

polarizing each coated sheet in the thickness direction;

bonding all of said sheets together to fabricate a matrix wherein adjacent ceramic sheets in opposite polarizing directions are next to one another;

bonding a film-like anti-abrasion member upon the surface of one of the exposed ceramic sheets of said matrix;

cutting the matrix to form a plurality of individual piezoelectric laminates so that the conductive coatings are exposed along both longitudinal sides of each laminate;

electrically insulating alternating ones of the conductive coatings exposed along one longitudinal side of each of said piezoelectric laminates;

electrically insulating the conductive coatings exposed along the opposite longitudinal side of each of said piezoelectric laminates wherein the alternating ones of the conductive coatings being electrically insulated are interspersed with the alternating ones of the conductive coatings being insulated on the opposite side of said piezoelectric laminate; and

applying a conductive coating to substantially the entire surface of both longitudinal sides of each piezoelectric

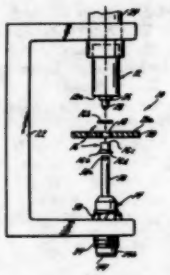
laminate whereby each of said conductive coatings is electrically connected with conductive coatings between said ceramic sheets which extend to the longitudinal side of the associated conductive coating.

5,191,689

GROMMET INSTALLATION DEVICE

Raymond J. Slesinski, Arnold, and Christian E. Schaefer, Glendale, both of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed May 1, 1992, Ser. No. 877,406
Int. Cl.[5] B23P *11/00*
U.S. Cl. 29—243.517 **8 Claims**



1. A device for installing a grommet into a workpiece defining an aperture, comprising:

(a) means for swaging said grommet into said aperture:

(b) means for supporting said grommet within said aperture of said workpiece, wherein said supporting means comprises:

(1) a cylindrical housing:

(2) retractable means, having a headed end retained within said cylindrical housing, for maintaining said grommet in said workpiece during installation; and

(3) means, enclosed within said cylindrical housing, for retractably extending said retractable maintaining means; and

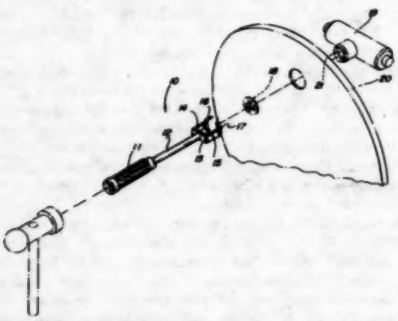
(c) means for aligning said swaging means with said supporting means during installation.

5,191,690

BRAKE TOOL

Robert S. Koehn, 24940 Monroe St., Kansasville, Wis. 53139

Filed Apr. 7, 1992, Ser. No. 864,558
Int. Cl.[5] B25B *27/14*
U.S. Cl. 29—275 **2 Claims**



1. A brake tool, comprising,

an elongate handle, the handle including an elongate shank integrally mounted to the handle extending forwardly thereof, with the shank and the handle coaxially aligned along a single axis, and

a support flange orthogonally and integrally mounted to a forward distal end of the shank spaced from the handle, the support flange including a first and second distal end spaced on opposed sides of the shank, with the first distal end having a first mounting flange integrally and orthogonally mounted to the support flange projecting forwardly of the support flange, with a second mounting flange arranged in a parallel spaced relationship relative to the first mounting flange integrally mounted to the second distal end, and

a first semi-cylindrical ring segment integrally mounted to the first mounting flange, and a second semi-cylindrical ring segment mounted to the second mounting flange, with the first and second semi-cylindrical ring segments concentric relative to one another and coaxially aligned about the axis, and

the first ring segment includes a planar first abutment surface, and the second ring segment includes a planar second abutment surface, wherein the first abutment surface and the second abutment surface are arranged in a coplanar relationship about a single plane, and the single plane orthogonally oriented relative to the axis, and

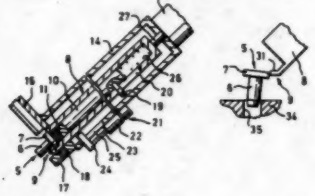
the first ring segment includes a semi-cylindrical first groove and the second ring segment includes a semi-cylindrical second groove, wherein the first groove and the second groove are coaxially aligned about the axis, and a first semi-cylindrical magnet and a second semi-cylindrical magnet, with the first semi-cylindrical magnet magnetically received within the first groove, and the second semi-cylindrical magnet received within the second groove for magnetic adherence of a brake clip to the first abutment surface and the second abutment surface.

5,191,691

APPARATUS FOR FEEDING SLENDER PARTS

Yoshitaka Aoyama, 20-11, Makitsukadai 2-chome, Sakai-shi, Osaka 590-01, Japan

Continuation of Ser. No. 667,933, Mar. 12, 1991, abandoned, which is a division of Ser. No. 392,513, Aug. 11, 1989, Pat. No. 5,035,039. This application Feb. 10, 1992, Ser. No. 830,970
Claims priority, application Japan, Aug. 15, 1988, 63-202948; Aug. 22, 1988, 63-208624; Aug. 22, 1988, 63-208625
Int. Cl.[5] B25B *27/14*
U.S. Cl. 29—281.4 **5 Claims**



1. An apparatus for feeding slender parts, comprising:

a feed rod operatively mounted for advancing in an oblique downward and horizontal direction and for retraction in a reverse direction;

part transfer means operatively connected to a fore end of said feed rod, for holding and transferring a slender part held thereon to a selected location; and

a magnet means located at the fore end of said feed rod and operatively positioned with said part transfer means, for magnetically attracting and holding the part in said part transfer means so as to allow transfer of the part, said magnet means being further for releasing the part from

said part transfer means when positioned at the selected location,

said part transfer means including a stopper portion for receiving a head of the part during transfer of the part and release guide means for guiding a rotative release motion of the part when said magnet means releases the part therefrom, the release guide means having a horizontal support extension that contacts a stem portion of the part during transfer and releasably guides the rotative release motion of the part through contact with the stem portion during release of the part.

5,191,692

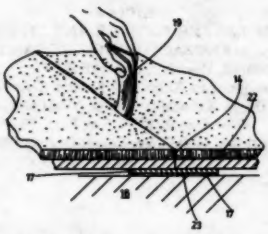
CARPET JOINTING METHOD

Joseph R. Pacione, Thornhill, Canada, assignor to Tac-Fast Systems SA, Switzerland

Filed Mar. 1, 1991, Ser. No. 663,006

Int. Cl.[5] B31F *5/00*

U.S. Cl. 29—423 **13 Claims**



1. A method of forming a seam between abutting edges of pile carpet wherein the carpet edges are attached to a base tape, comprising:

laying a composite tape comprising a cover tape and a base tape on a substrate along a line of abutment for selected carpet edges wherein the cover tape is wider than the line of abutment;

placing carpet pieces on the substrate in location for abutment of selected respective edges; and

attaching the carpet edges to the base tape by removing at least sections of the cover tape from the base tape wherein the cover tape passes between the selected edges, brushes the pile of the carpet in the removal direction and pulls down-turned pile upwardly through the seam.

5,191,693

TAPE TYPE WORK CONVEYING METHOD AND CONVEYING APPARATUS

Sachio Umetsu, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 28, 1990, Ser. No. 635,872

Claims priority, application Japan, Dec. 29, 1989, 1-341983; Dec. 29, 1989, 1-341984

Int. Cl.[5] B23P *11/00*

U.S. Cl. 29—429 **11 Claims**

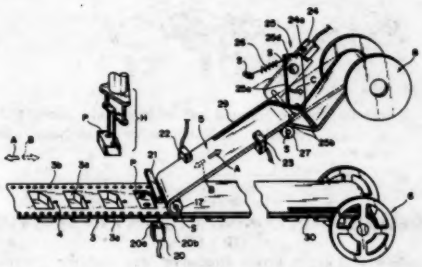
1. A method for operating a workpiece handling apparatus having a main controller and a robot hand and being interconnected to a tape conveying apparatus with the tape conveying apparatus having a conveying tape with a plurality of successive placing portions for placing and conveying workpieces, a cover tape for covering openings of the placing portions on the conveying tape, a first reel for fixing end portions of the conveying tape and the cover tape and simulatneously taking up the conveying tape and the cover tape, a second reel for fixing an end portion of the conveying tape and taking up only the conveying tape, a third reel for fixing an end portion of the cover tape and taking up only said cover tape, drive assemblies for rotatably driving the first, second, and third reels, an intermittent driver for intermittently driving the conveying tape, a controller for controlling the driver assemblies and the intermittent driver, a first detector for detecting indicating portions on the conveying tape to indicate the placing portions, and a guiding mechanism for interconnecting the workpiece handling apparatus and the tape conveying apparatus, said method comprising the steps of:

interconnecting the workpiece handling apparatus and the tape conveying apparatus together;

connecting the main controller of the workpiece handling apparatus and the controller of the tape conveying apparatus;

winding the conveying tape and cover tape;

detecting the indicating portions on the conveying tape with the first detector to determine the placing portions on the conveying tape;



manipulating the robot hand to pick up or place workpieces in the placing portions on the conveying tape;

synchronizing the mainpulating step with movement of the placing portions to precisely pick up or place the workpieces in the placing portions based on the detecting indicating portions;

driving the first reel and the intermittent driver on the basis of the detection result from the first detector when the workpieces are manipulated after the tape conveying apparatus is guided and positioned with respect to the workpiece handling apparatus; and

detecting with a second detector a detection member arranged near an end portion of the cover tape fixed to the third reel for indicating that the conveying tape is almost full of workpieces.

5,191,694

CASSETTE ASSEMBLY LINE

Ralph Ruggiero; Thomas R. Plourde, and Joseph Kaczynski, Jr., all of Tuscon, Ariz., assignors to Shape Inc., Biddeford, Me.

Filed Jul. 3, 1991, Ser. No. 725,480

Int. Cl.[5] B23P *21/00*

U.S. Cl. 29—430 **5 Claims**

1. A method for assembling a cassette, comprising the steps of:

(a) conveying a cassette shell base and cassette shell cover along an assembly line;

(b) supplying a first tape reel to a movable member;

(c) moving the movable member;

(d) supplying second and third tape reels to the movable member, adjacent each other but spaced from the first tape reel;

(e) feeding leader supply to the first tape reel;

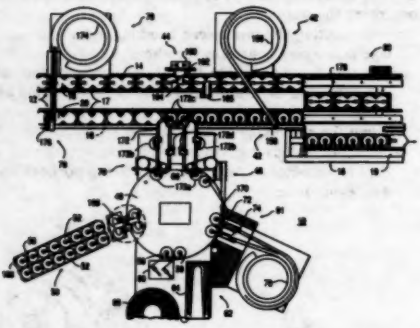
(f) connecting said leader supply to said first tape reel;

(g) moving the movable member so that the leader supply extends across the second and third tape reels;

(h) connecting the leader supply to the second and third tape reels;

(i) cutting said connected leader supply between the second

and third tape reels from the remainder of said leader supply; and



(j) transferring the first and second tape reels, connected by the leader, from the movable member to the cassette shell base.

5,191,695

METHOD OF RETAINING A TOKEN IN A RING PULL OR LEVER

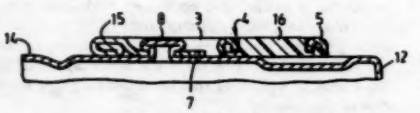
Andrew P. Pavely, Lower Blunsdon; Roy J. Marr, Newbury; Peter S. Foskett, and David M. White, both of Abingdon, all of United Kingdom, assignors to CMB Foodcan plc, United Kingdom

Filed Oct. 23, 1991, Ser. No. 781,693

Claims priority, application United Kingdom, Oct. 25, 1990, 9023243

Int. Cl.[5] B23P *11/02*

U.S. Cl. 29—451 **11 Claims**



1. A method of retaining a token in a ring pull or lever, said method being characterised by the steps of feeding a strip of material including token portions to a parting station, applying pressure to the strip to part a token from the strip and apply the parted token to the lever or ring pull, and clinching a peripheral portion of the material of the lever or ring pull into engagement with the token.

5,191,696

METHOD FOR JOINING ROLLED PLATES

Osamu Kishi; Kanji Hayashi; Hideaki Furumoto; Osamu Miyamoto; Kazuo Morimoto; Hideki Akita; Yasuyuki Yoshida, and Ikuo Wakamoto, all of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 9, 1991, Ser. No. 774,181

Claims priority, application Japan, Oct. 15, 1990, 2-273219; Oct. 15, 1990, 2-275889; Nov. 7, 1990, 2-299810

Int. Cl.[5] B21D *39/00*

U.S. Cl. 29—521 **8 Claims**

1. In a method for joining rolled plates in a continuous rolling line wherein the tail end part of a preceding rolled plate and the head end part of a following rolled plate are joined after rough rolling and then subjected to continuous finish rolling, the improvement which comprises

forming the tail end of the preceding rolled plate and the head end of the following rolled plate into a nearly rectangular convex and concave shape so as to inlay each other;

joining the convex part and the concave part in the same plane as the rolling line; and then

subjecting the joined plates to continuous finish rolling.

5,191,697

LOUDSPEAKER DAMPER AND METHOD OF MANUFACTURING THE SAME

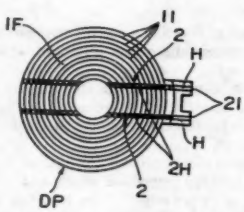
Yoshio Sakamoto, Hachioji, and Akihiko Haga, Shinjo, both of Japan, assignors to Kabushiki Kaisha Kenwood, Tokyo and Mogami Denki Kabushiki Kaisha, Yamagata, all of Japan

Filed Oct. 4, 1991, Ser. No. 770,861

Claims priority, application Japan, Oct. 5, 1990, 2-267872

Int. Cl.[5] H04R *31/00*

U.S. Cl. 29—594 **5 Claims**



1. A method of manufacturing a loudspeaker damper having the steps of varnishing a woven cloth with thermosetting resin and drying the varnished woven cloth into a semi-dry state, attaching a conductive material to the surface of the varnished woven cloth in a semi-dry state and thermally molding the woven cloth with the conductive material to form concentric corrugation along which the conductive material used as a conductive wire for a voice signal is formed, wherein said method comprising the step of:

after attaching said conductive material to said varnished woven cloth in a semi-dry state, coating creamy solder to said conductive material at a predetermined area, melting said creamy solder by the heat at said thermal molding step to form preparatory solder at the end portion of said conductive material.

5,191,698

METHOD OF MAKING A RESIN-MOLDED MOTOR

Masatomo Sumi; Shigeo Inaki, both of Takefu; Yutaka Takamiya, Osaka, and Genki Kondo, Takefu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 406,356, Sep. 12, 1989, Pat. No. 5,134,327. This application Jun. 2, 1992, Ser. No. 878,610

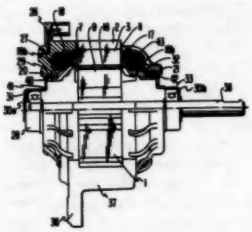
Claims priority, application Japan, Sep. 14, 1988, 63-230446

Int. Cl.[5] H02K *15/02*

U.S. Cl. 29—596 **1 Claim**

1. A method of producing a resin-molded motor comprising disposing a punched-out stator member with independent magnetic poles between a couple of units of punched-out core

member with magnetic poles interconnected at inner edges of its slots to form a ring, laminating said members, cladding said slots, inner edges and ends of the assembly by resin molding for insulation and bonding to fabricate a magnet pole member, forming a generally cylindrical synthetic resin shroud, the inner diameter of which is equal to that of the magnetic pole member and the outer diameter of which is equal to that of the insulation layer at the bottom of the slot, with the inner and outer diameters being tapered toward the tip, with the length of the shroud being slightly greater than the length of the coil end, applying windings to said magnetic pole member, con-



necting the coil ends of windings to connector terminals, inserting wedges, fitting projections of a yoke member having cut-out groves for passage of resin along its outer periphery into the slot openings of the magnetic pole member to form a stator, disposing a separately molded shroud of the same shape as the first-mentioned shroud at the other end face of said magnetic pole member, disposing a sheet steel bracket with journal means for supporting a bearing for a rotor at the end of such shrouds, applying windings to said stator, connecting coil ends of said windings to connector terminals, and forming a frame for housing said stator, windings, shrouds and brackets and said connector in an integral unit by resin molding.

5,191,699

METHODS OF PRODUCING A CHIP-TYPE HF MAGNETIC COIL ARRANGEMENT

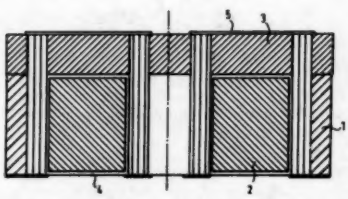
Michael Ganslmeier, Grafenhaun, and Horst Wünschmann, München, both of Fed. Rep. of Germany, assignors to GW-Elektronik GmbH, München, Fed. Rep. of Germany

Filed Sep. 4, 1991, Ser. No. 754,587

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1990, 4027994; European Pat. Off., Apr. 12, 1991, 91105864

Int. Cl.[5] H01F *41/04*

U.S. Cl. 29—602.1 **22 Claims**



1. A method of producing a chip-type HF magnetic coil arrangement, comprising the steps of:

locating a toroidal magnetic core within an annular opening in an insulating basic body (1), the annular opening corresponding to a size of the toroidal magnetic core, the basic body having a bottom side and being composed of an embedding plastic material, the core extending about an axis and in an axial direction;

attaching a cover to the basic body for enclosing the core;

providing a first plurality of holes which extend through the basic body in the axial direction of the core so that the holes extend radially outside of the core and providing a second plurality of holes which extend through the basic body in the axial direction of the core so that the holes extend radially inside of the core; and

forming at least one winding which extends around the core in turns, the step of forming including

extending an electrically conductive material (8) within each of first and second plurality of holes and fully between the cover and the bottom side of the basic body;

providing a first plurality of conductors (5) on the bottom side of the basic body each being arranged for electrically connecting the conductive material within respective ones of the first and second plurality of holes; and

providing a second plurality of conductors on the cover each being arranged for electrically connecting the conductive material within respective ones of the first and second plurality of holes,

whereby the steps of providing the first and second pluralities of conductor elements include arranging the first and second plurality of conductors in an arrangement which, together with the conductive material within the first and second plurality of holes, constitute the turns of the at least one winding.

5,191,700

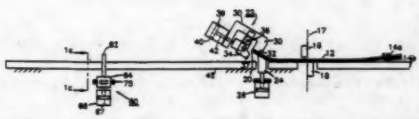
METHOD FOR MAKING PACKETS OF AMORPHOUS METAL STRIP FOR TRANSFORMER-CORE MANUFACTURE

Willi Klappert, and David R. Freeman, both of Hickory, N.C., assignors to General Electric Company, Malvern, Pa.

Continuation of Ser. No. 626,213, Dec. 12, 1990, Pat. No. 5,063,654. This application Aug. 1, 1991, Ser. No. 739,341

Int. Cl.[5] H01F *41/02*

U.S. Cl. 29—609 **8 Claims**



1. A method of making packets of amorphous metal strip adapted to be wrapped about the arbor of a transformer-core-making machine, each packet comprising a plurality of groups of strip, each group comprising many thin layers of strip, each layer having two longitudinally-extending edges at opposite sides of the layer and two-transversely extending edges at opposite ends of the layer, the longitudinally-extending edges at each side of the layers of each group being substantially aligned and the transversely-extending edges at each end of the layers in each group being substantially aligned, said method comprising:

(a) providing composite strip comprising many thin layers of amorphous metal strip stacked in superposed relationship,

(b) cutting said composite strip a first time to form a first multi-layer section of predetermined length,

(c) cutting said composite strip a second time to form a second multi-layer section of predetermined length,

(d) substantially aligning said multi-layer sections to form from said substantially aligned multi-layer sections one of said groups, and

(e) carrying out the cutting steps of (b) and (c) hereinabove with blades capable of cutting only a predetermined maximum number of said layers of amorphous metal strip without causing the life of the blades to sharply drop, sad maximum number being less than the number of layers in each group but greater than the number of layers cut in each of steps (b) and (c).

5,191,701

METHOD FOR THE AUTOMATED MANUFACTURE OF WOUND ELECTRICAL COMPONENTS BY CONTACTING THIN INSULATED WIRES TO TERMINAL ELEMENTS ON THE BASIS OF LASER WELDING

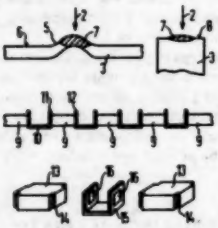
Manfred Espenhain, Heidenheim, Fed. Rep. of Germany, assignor to Siemens Matsushita Comp. GmbH & Co. KG, Fed. Rep. of Germany

Filed Dec. 3, 1991, Ser. No. 802,048

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1990, 4039527

Int. Cl.[5] B23P *17/00;* **H01F** *7/06;* **H01R** *43/02*

U.S. Cl. 29—605 **14 Claims**



1. A method for automated manufacture of wound electrical components wherein thin insulating wires are attached to terminal elements, comprising the steps of:

by laser welding, melting only the terminal element so as to form a welding spot by direct laser irradiation at a location desired for the welding; and

subsequently embedding the wire into the welding spot as soon as the welding spot has cooled to such an extent that the wire subsequently melts only superficially.

5,191,702

MANIPULATING APPARATUS FOR MANIPULATION OF WORKPIECES

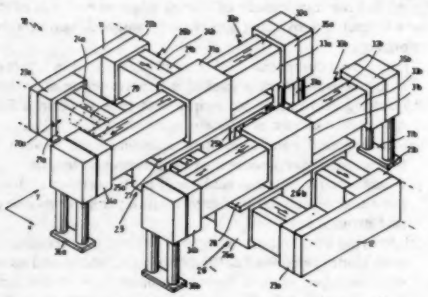
Wolf-Dieter Goedecke, Unterkirnach; Bernhard Moosmann, Hardt, and Ralf Huber, Brigachtal, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Jan. 25, 1991, Ser. No. 646,147

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1990, 4002075

Int. Cl.[5] H05K *3/30, 13/04*

U.S. Cl. 29—742 **14 Claims**



1. A manipulating apparatus comprising

a first individual axis element;

a second individual axis element disposed parallel relative to the first individual axis element and forming with the first individual axis element a first linear axis element;

a first double slider furnished at and engaging the first linear axis element, wherein the first double slider runs on profiles of the first individual axis element and of the second individual axis element;

a second drive means formed at the second individual axis element, wherein the first double slider is coupled to the second drive means and runs non-driven on the profile of the first individual axis element;

a second double slider running on the profile of the first individual axis element and non-driven on the profile of the second individual axis element;

a first drive means formed at the first individual axis element, wherein the second double slider is coupled to the first drive means,

wherein the first individual axis element is formed by a first piston-cylinder unit without piston rod and including a first piston, and wherein the second individual axis element is formed by a second piston-cylinder unit without piston rod and including a second piston, wherein the first double slider is connected to the second piston via a second belt, and the second double slider is connected to the first piston via a first belt, wherein the second belt of the second individual axis element is connected at a defined position to the first double slider and runs loosely through a second passage of the second double slider, wherein the first belt of the first individual axis element is connected at a defined position with the second double slider and runs loosely through a first passage of the first double slider.

5,191,703

METHOD OF MAKING AN ANILOX ROLLER OR CYLINDER

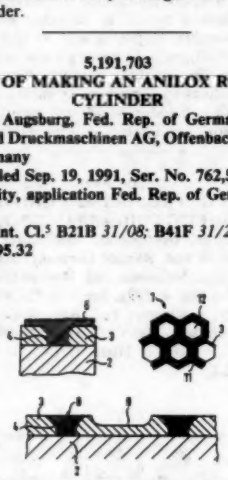
Thomas John, Augsburg, Fed. Rep. of Germany, assignor to MAN Roland Druckmaschinen AG, Offenbach am Main, Fed. Rep. of Germany

Filed Sep. 19, 1991, Ser. No. 762,582

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1990, 4036661

Int. Cl.[5] B21B *31/08;* **B41F** *31/26*

U.S. Cl. 29—895.32 **16 Claims**



1. A method of making an anilox roller or cylinder, for use in an inker of a rotary printing machine, in which the anilox roller or cylinder (1) has

a roller or cylinder core (2);

ribs (8) of wear-resistant material projecting from the core;

a layer (3) of ink accepting material between the ribs, located on the core (2) and formed with ink accepting receptor depressions or cells (9) which extend only through a portion of the thickness of said layer,

said method comprising, the steps of

applying a layer (3) of ink accepting material on a core (2) with a thickness which exceeds the depth of the receptor depressions or cells (9) to be formed on said ink accepting layer;

forming grooves (4) in said layer (3) of ink accepting material;

filling said grooves (4) with said wear-resistant material, thereby forming said ribs (8); and

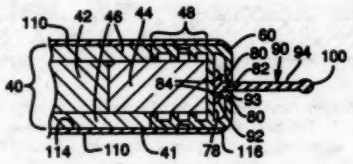
forming said receptor depressions or cells (9) in said layer (3) of ink accepting material in the regions between the ribs.

5,191,704

INSULATING INDUSTRIAL DOOR MANUFACTURING METHOD

Lon H. McCarty, Estacada, Oreg., assignor to Econo Max Manufacturing, Gresham, Oreg.

Division of Ser. No. 638,843, Jan. 8, 1991. This application Feb. 27, 1992, Ser. No. 843,413
Int. Cl.[5] B23P *19/00, 25/00*
U.S. Cl. 29—897.32 11 Claims



1. A method of making a door comprising:

mounting an edge rail to at least one peripheral edge section of a core of a door, the core having first and second opposed major surfaces;

mounting first and second face sheets to the respective first and second major surfaces, the face sheets being sized to extend beyond the edge rail with the edge rail positioned therebetween; and

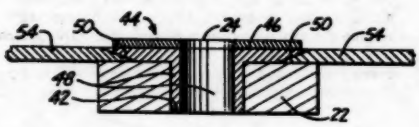
cutting the face sheets along the edge of the rail to define the edge of the door.

5,191,705

COMBINATION FOR REMOVABLY SUPPORTING A MAGNETIC TRANSDUCER CARRYING ARM

Eyvand E. Toensing, Savage, Minn., assignor to Seagate Technology Inc., Scotts Valley, Calif.

Division of Ser. No. 444,622, Dec. 1, 1989, Pat. No. 5,012,367. This application Jan. 14, 1991, Ser. No. 641,164
The portion of the term of this patent subsequent to Apr. 30, 2008, has been disclaimed.
Int. Cl.[5] G11B *5/42*
U.S. Cl. 29—764 20 Claims



1. In combination:

a support arm including a hole defined in the support arm creating a first passageway therethrough;

a transducer carrying arm for carrying a magnetic transducer for reading and writing magnetically encoded information, the transducer carrying arm having a hole therein for creating a second passageway therethrough;

a ball stake connector for mounting the support arm to the transducer carrying arm, the ball stake connector including a mounting plate joined to the carrying arm and sandwiched between the transducer carrying arm and the support arm and a tubular member extending from the mounting plate into the first passageway for ball stake connection to the support arm;

opposing surfaces of the support arm and the mounting plate defining tool insertion gaps between the transducer carrying arm and the support arm for use in disengaging the ball stake connector; and

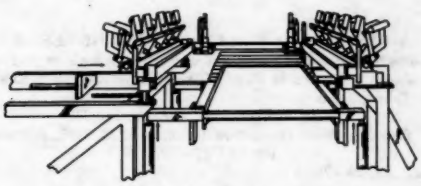
a tool adapted for being received in the tool insertion gaps wherein opposing surfaces of the support arm and the mounting plate receive a separation force from the tool to cause separation of the transducer carrying arm and the support arm.

5,191,706

MACHINE AND METHOD FOR ATTACHING CASING TO A STRUCTURAL FRAME ASSEMBLY

Marvin P. Cosden, Dover, Del., assignor to Delmarva Sash & Door Company of Maryland, Inc., Barclay, Md.

Filed Jul. 15, 1991, Ser. No. 730,223
Int. Cl.[5] B23P *21/00*
U.S. Cl. 29—787 43 Claims



1. A machine for attaching casing to a structural frame assembly, said machine comprising:

a support frame assembly;

a fixed bank of stapling units supported by said support frame assembly, said fixed bank including

a fixed bank pivot bar rotatably supported by said support frame assembly,

at least one fixed bank stapling unit, attached to said fixed bank pivot bar, for driving staples to attach said casing to said structural frame assembly,

fixed bank clamping means for clamping said casing adjacent said structural frame assembly during the stapling of said casing to said structural frame assembly, said fixed bank clamping means being attached to said fixed bank pivot bar, and

a fixed bank jamb locator fixedly supported by said support frame assembly;

a movable bank of stapling units spaced from and oriented substantially parallel to said fixed bank of stapling units and including

support bars slidably supported by said support frame assembly,

a movable bank pivot bar rotatably supported by said support bars,

a movable bank jamb locator fixedly supported by said support bars,

at least one movable bank stapling unit, attached to said movable bank pivot bar, for driving staples to attach said casing to said structural frame assembly,

movable bank clamping means for clamping said casing adjacent said structural frame assembly during the stapling of said casing to said structural frame assembly, said movable bank clamping means being attached to said movable bank pivot bar, and

means for reciprocally sliding said support bars relative said support frame assembly;

a head bank of stapling units located at one end of said fixed and movable banks of stapling units and including

a head bank pivot bar rotatably supported by said support frame assembly,

a head bank stapling unit, attached to said head bank pivot bar, for driving staples to attach said casing to said structural frame assembly, and

head bank clamping means for clamping said casing adjacent said structural frame assembly during the stapling

of said casing to said structural frame assembly, said head bank clamping means being attached to said head bank pivot bar; and

means for controlling and activating said sliding means of said movable bank, all of said stapling units and all of said clamping means;

wherein said jamb locators are designed and positioned to receive and engage the structural frame assembly.

5,191,707

WORKING LINE FOR REAR FLOOR OF VEHICLE

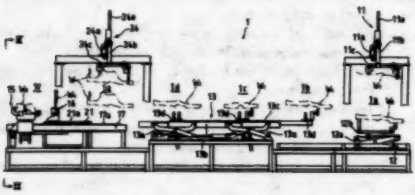
Hiroshi Sasamoto, and Keizaburo Ohtaki, both of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 12, 1991, Ser. No. 790,037

Claims priority, application Japan, Nov. 28, 1990, 2-326468

Int. Cl.[5] B23P *21/00*

U.S. Cl. 29—783 **3 Claims**



1. A working line for a rear floor of a vehicle for assembling the rear floor by combining a rear frame, rear wheel housings and a rear panel to a rear floor panel, said working line comprising:

a first setting station for setting the rear floor panel on the rear frame;

a combining station for combining the rear floor panel to the rear frame;

an assembling station for assembling the rear floor by combining the rear wheel housings and the rear panel to the combined rear floor panel and rear frame;

a second setting station, said first setting station through said second setting station being disposed in the order described above from a starting end towards a finishing end of said working line;

right and left first setting means, which are reciprocated between said second setting station and said assembling station for assembling the rear wheel housings, which are preliminarily set to said right and left setting means in said second setting station to the rear floor panel when said first setting means are advanced to said assembling station;

second setting means which is provided within a space defined by said right and left first setting means and is reciprocated between said second setting station and said assembling station, for assembling the rear panel, which is preliminarily set to said second setting means in said second setting station, to the rear floor panel when said second setting means is advanced to said assembling station; and

discharging means for hanging the assembled rear floor and passing it out of said assembling station.

5,191,708

MANUFACTURING METHOD OF A PROBE HEAD FOR SEMICONDUCTOR LSI INSPECTION APPARATUS

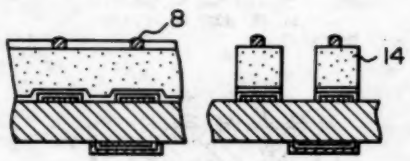
Susumu Kasukabe, Yokohama, and Ryuichi Takagi, Tokyo, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 7, 1991, Ser. No. 711,864

Claims priority, application Japan, Jun. 20, 1990, 2-159734

Int. Cl.[5] H05K *3/02*

U.S. Cl. 29—846 **27 Claims**



1. A manufacturing method of a probe head for a semiconductor LSI inspection apparatus which transmits an electric signal to an inspection apparatus body by coming in contact with electrode pads of a semiconductor LSI, the probe head having probes, comprising the steps of:

providing a wiring substrate in which electrode pads for forming probes are arranged on one surface, electrode pads for transmitting an electric signal between the inspection apparatus and the electrode pads of said LSI are arranged on an underside thereof, and the pads on said both sides are interconnected electrically;

forming a conductive attaching layer for improving attaching strength on the electrode pads for forming said probes;

forming a conductive lower layer, having a thickness almost corresponding to a height required for the probes, on said wiring substrate including said conductive attaching layer;

forming a first mask pattern in which openings in the first mask pattern are aligned on a central axis of electrode pads for forming said probes;

forming a probe tip-forming conductive upper layer in said first mask pattern;

removing said first mask pattern on said conductive lower layer;

forming a second mask pattern which covers both said probe tip-forming conductive upper layer and said conductive lower layer, a central axis of the second mask pattern being made to coincide with that of said electrode pads;

forming a pin configuration by applying etching to said conductive lower layer with said second mask pattern as a mask, exposing portions of the conductive attaching layer;

removing the exposed portions of said conductive attaching layer by etching; and

removing the second mask pattern which covers said probe tip forming conductive upper layer.

5,191,709

METHOD OF FORMING THROUGH-HOLES IN PRINTED WIRING BOARD

Shin Kawakami; Satoshi Haruyama, and Hirotaka Okonogi, all of Saitama, Japan, assignors to Nippon CMK Corp., Japan

Filed Aug. 2, 1991, Ser. No. 739,706

Claims priority, application Japan, Aug. 10, 1990, 2-213150

The portion of the term of this patent subsequent to Jul. 28, 2009, has been disclaimed.

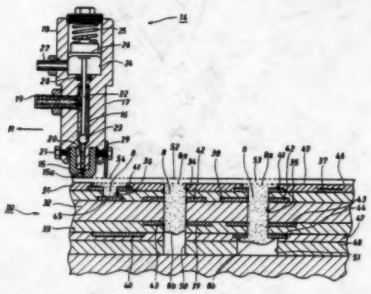
Int. Cl.[5] H01K *3/10*

U.S. Cl. 29—852 **4 Claims**

1. A method for filling through-holes in a printed wiring board having printed circuits formed on both sides of a substrate, and through-holes in the substrate for interconnecting the printed circuits on both sides thereof, the method comprising the steps of:

mounting and setting said substrate on the upper side of a

cover plate while aligning said individual through-holes of the substrate with relief holes of the cover plate and mounting and setting a mask on the upper side of said substrate while aligning the through-holes of the mask with said individual through-holes of the substrate, and



then injecting and filling a conductive material into the individual through-holes of said substrate from a filling nozzle through the individual through-holes of said mask and removing the excessive part of the conductive material filled in the individual through-holes of said substrate by the use of a squeegee.

5,191,710

METHOD OF FORMING AN ELECTRODE UNIT

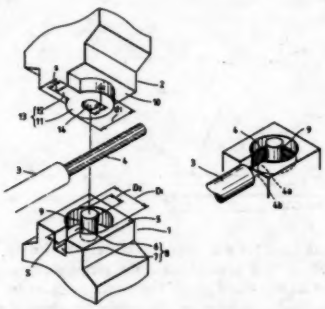
Hirohiko Fujimaki, and Kazuhito Sano, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Dec. 31, 1991, Ser. No. 815,181

Claims priority, application Japan, Jan. 8, 1991, 3-11554

Int. Cl.[5] H01R *43/04*

U.S. Cl. 29—863 **15 Claims**



1. A method of forming an electrode unit comprising the steps of:

setting a conductor of electric wire in an electric wire housing groove of a female pressing electrode in such a manner that said conductors are wound on a guide pin of said female pressing electrode;

compressing said conductor by supplying said female pressing and a male pressing electrodes with compression; and

heating said conductors by applying an electric current to said female pressing and said male pressing electrodes.

5,191,711

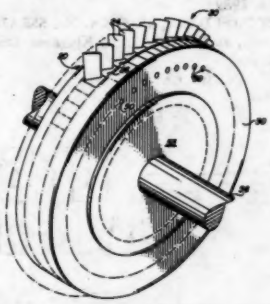
COMPRESSOR OR TURBINE BLADE MANUFACTURE

Thomas E. Vickers, Mesa, and James A. Sanger, Prescott, both of Ariz., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Dec. 23, 1991, Ser. No. 812,776

Int. Cl.[5] B23B *1/00*

U.S. Cl. 29—889.21 **8 Claims**



1. A method of machining compressor or turbine blade outer diameters comprising:

loosely assembling an annular array of blades upon the outer periphery of a rotor, with platform portions of the blades protruding axially forwardly and aft from opposite sides of the rotor;

mounting first and second ring fixtures on the opposite sides of the rotor;

axially intersecuring the ring fixtures to axially fix and locate the blades;

applying a generally circumferentially uniform radially outward force to the protruding platform portions of the blades to radially position and fix the blades; and

machining the outer tips of the blades while so axially and radially fixed.

5,191,712

SAFETY RAZORS AND GUARDS

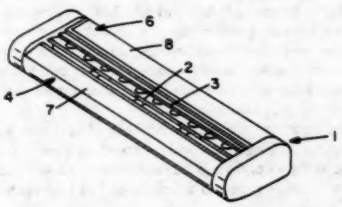
Alan Crook, Basingstoke; Oliver D. Oglesby, Tadley, and Brian Oldroyd, Reading, all of England, assignors to The Gillette Company, Boston, Mass.

Continuation of Ser. No. 659,430, May 16, 1991, abandoned. This application Sep. 11, 1992, Ser. No. 943,993

Claims priority, application United Kingdom, Oct. 28, 1988, 8825268

Int. Cl.[5] B26B *19/42*

U.S. Cl. 30—34.2 **13 Claims**



1. A safety razor having one or more blades and a skin engaging surface wherein said surface is formed by a plurality of upstanding straight filaments said filaments extending throughout their length away from said surface, said filaments present at a density of at least 100 per sq. mm, the filaments having a uniform length of 0.3 to 2.00 mm and diameters in the range of $(1.5 \text{ to } 3.2) \times 10^{-2}$ mm.

5,191,713

ELECTRONIC TILT MEASURING SYSTEM

Robert M. Alger, Hampshire, and Joseph S. Falzon, deceased, late of Hampshire, England by Leonora Falzon, administratrix , assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

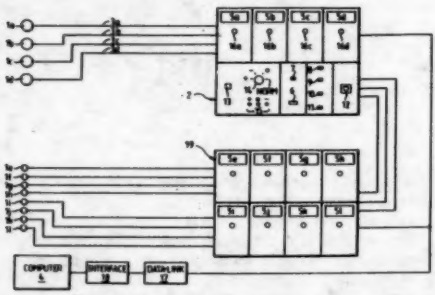
PCT No. PCT/GB88/01064, § 371 Date Jul. 12, 1991, § 102(e) Date Jul. 12, 1991, PCT Pub. No. WO89/05961, PCT Pub. Date Jun. 29, 1989

PCT Filed Dec. 2, 1988, Ser. No. 555,422

Claims priority, application United Kingdom, Dec. 16, 1987, 8729382

Int. Cl.[5] G01C *9/06*

U.S. Cl. 33—366 21 Claims



1. A means for measuring relative tilt of one or more platforms to a nominated datum platform, comprising at least one inclinometer per platform and characterised in that it further comprises:

a) means to average each inclinometer output over a synchronised time period; and

b) a computer programmed to analyse measured data, calculate tilt angles and relative tilts and display the results.

5,191,714

PROTRACTOR

Wun-hui Liu, No. 2, Jiann Guon Lane, Jiunn Huon LI, Taichung, Taiwan

Filed May 22, 1992, Ser. No. 886,901

Int. Cl.[5] G01C *9/12*

U.S. Cl. 33—391 2 Claims

1. A protractor comprising;

a main body having a center beam,

an upper elongated board and a lower elongated board respectively integrally engaged to an upper edge and a lower edge of said beam,

said upper elongated board and said lower elongated board having a width greater than a width of said center beam,

said upper elongated board having a rectangular hole communicating with a first V-shaped hole in said beam,

a V-shaped frame having two arms joined together at a first end of each of said two arms,

a slot on an outer surface of said each of said two arms,

an arc piece having a first scale marked on a side of said arc piece and a second scale marked on a top of said arc piece,

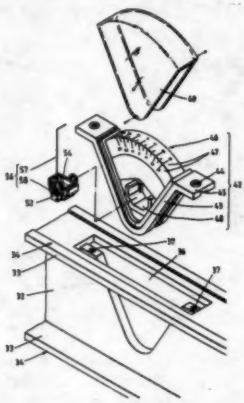
said arc piece engaged to a second end of said each of said two arms,

said V-shaped frame having a seat integrally engaged between said first end of each of said two arms,

said V-shaped frame fastened in said rectangular hole and said first V-shaped hole so that a rim of said first V-shaped hole extends into and engages said slot of said each of said two arms,

an indicating means having a shaft base engaged in said seat,

a pointer pivotally mounted on a shaft engaged on said shaft base,



said pointer having a first end extending to reach over said first scale and said second scale and a second end with a balancing weight.

5,191,715

DRAFTING HEAD FOR A DRAFTING MACHINE

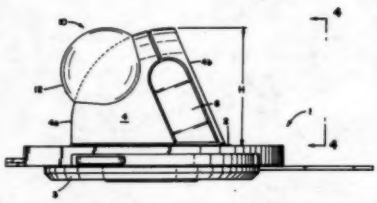
Uwe Jopt, Wilhelmshaven, Fed. Rep. of Germany, assignor to Franz Kuhlmann Prazisions-Mechanic und Maschinenbau GmbH & Co. K.G., Wilhelmshaven, Fed. Rep. of Germany

Filed Aug. 6, 1991, Ser. No. 740,806

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1990, 4025886

Int. Cl.[5] B43L *13/08*

U.S. Cl. 33—438 16 Claims



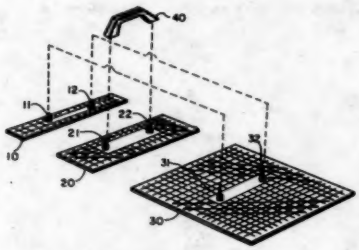
1. Drafting head for a drafting machine, comprising a gripping member having several actuating elements arranged on the gripping member and capable of being actuated by a hand of the user that is resting on the gripping member for the purpose of executing various switching statuses, including disengaging, and/or free-switching, secured locking of the normal side and releasing the locking of the normal side of the drafting head, wherein at least one actuating element is provided for disengaging and/or free-switching the normal side of the drafting head, and one actuating element for locking the normal side of the drafting head and wherein the actuating element for locking is disposed on the gripping member such that it rests against the inner surface of the ball of the thumb of the user hand that is to be rested on the gripping member.

5,191,716

TOOL FOR MEASURING, MARKING AND CUTTING FABRIC MATERIALS

James E. Anderson, 832 S. Ashland, LaGrange, Ill. 60525

Filed Jun. 29, 1992, Ser. No. 905,322
Int. Cl.[5] B43L *13/00*
U.S. Cl. 33—483 11 Claims



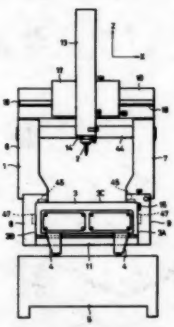
1. A tool for holding fabric or similar material comprising:
a C-shaped handle;
a plurality of selectively interchangeable rectangular sheets of transparent material and of different sizes each including first and second connecting means for connecting said sheet to said handle;
said handle further including two receiving means to receive said connecting means of each of said transparent sheets;
said first and second connecting means adapted to be engaged by said two receiving means;
a plurality of indicia marked on said transparent sheets;
said handle readily detachable, or in the alternative attachable to each of said plurality of sheets separately.

5,191,717

COORDINATE MEASURING INSTRUMENT

Matusiro Fujitani, Kawasaki; Hideo Takaku, Tokyo, and Yukiji Yoda, Kawasaki, all of Japan, assignors to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 917,942, Sep. 19, 1986, Pat. No. 4,727,653. This application Sep. 8, 1987, Ser. No. 94,440
Claims priority, application Japan, Jan. 22, 1985, 60-7546; Jan. 25, 1985, 60-12249
Int. Cl.[5] G01B *5/03, 7/03*
U.S. Cl. 33—503 4 Claims



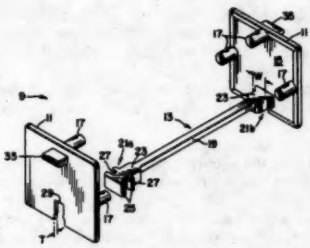
1. In combination with a coordinate measuring machine of the type including a base having a table portion spaced above a base portion; a bridge having a pair of spaced vertical members an upper cross member connecting together said vertical members, above said table portion, and a lower cross member connecting together said vertical members below said table portion; a probe; means mounting said probe for horizontal and vertical motion relative to said upper cross member; and means for supporting said bridge for movement on said base in a horizontal direction orthogonal to said probe horizontal movement on said bridge, the improvement comprising:
a guide rail located along the central axis of said base and applied to said table portion; and means, carried by the central section of said lower cross member for acting on said guide rail to guide movement of said guide rail and said bridge on said support means as said bridge moves in the horizontal direction along the central axis of said base.

5,191,718

MASONRY BLOCK SPACER TOOL

Robert E. Fox, St. Clair Shores, Mich., assignor to Trend Products Inc., Warren, Mich.

Filed Apr. 3, 1992, Ser. No. 862,723
Int. Cl.[5] G01B *3/30, 5/14;* F04G *21/18, 17/075*
U.S. Cl. 33—526 12 Claims



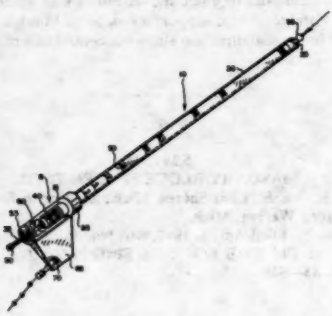
1. In a masonry block spacer tool for holding glass blocks in proper spaced alignment during construction of a panel or wall being formed of said blocks, said spacing between said blocks being fillable with mortar and said tool including a pair of opposing plate-like base members having opposite, opposing faces, a plurality of pin-like projections extending from each said opposing face toward the other opposing face of said other plate-like base member, said pin-like projections being so arranged on each of said opposing plate-like base members and of such a size and location so as to project into said spacing fillable with said mortar, but not to displace any significant portion of said mortar if, and when, said spacing is filled therewith, and so as to receive and retain opposing corner surfaces of said blocks, each said pin-like projection extending from one of said opposing faces having a substantially co-axially aligned corresponding pin-like projection extending from the other of said opposing faces, thereby to properly space and align said block with respect to each other, and means for firmly securing said spacing and alignment of said blocks which includes for each pair of said opposing plate-like base members, a cross-member means sufficiently thin so as not to displace a significant portion of said mortar if, and when, the spacing in which it resides is filled with said mortar, and aperture means located in one half and approximate horizontal center of each of said opposing faces and aligned with the other, said cross-member means being fastenable in said aperture means thereby to tightly secure said spacing and alignment of said blocks, the improvement comprising, as said cross-member means an integral elongated member having at each of its ends means for securing said member in said aperture means, said member extending inwardly therefrom and through said aperture means thereby to form one of said pin-like projections extending from each said opposing face toward the other opposing face of said other plate-like base member.

5,191,719

DEPTH GAUGE FOR A FISHING LINE

Steve B. Kitt, 1245 26th St., Ogden, Utah 84401

Filed Oct. 21, 1991, Ser. No. 780,154
Int. Cl.[5] G01B 3/02
U.S. Cl. 33—719 6 Claims



1. A method of submerging baits and lures at desired depths in a body of water for trolling for fish, wherein a fishing line is towed extending rearwardly from a towing vessel, comprising the steps;

providing a fishing line having an elongate water depth gauge secured at an end thereof selectively carrying baits and lures;

towing the line through the body of water;

withdrawing the line from the water to determine the depth of submersion of the baits and lures by reading of the gauge;

adjusting one or more conditions known to effect the depth of submersion, selected from among a group of conditions including the speed of the vessel and the weight of the baits and lures, and trolling the line, bait and lure, and gauge again through the water;

repeating the trolling, withdrawing, gauge reading and adjusting steps until the desired depth of submersion is indicated by the gauge; wherein

the water depth gauge comprises

an elongate light transmitting tube, having an opening extending longitudinally therethrough and having one end closed;

valve means allowing water to enter the open end of the tube when the external water pressure exceeds the pressure therewithin, and preventing the escape of air and water therefrom when the internal pressure exceeds the external pressure;

scale means carried by the tube, indicating the depth of submersion in accordance with Boyle's Law;

reset means for releasing the water and pressure contained in the tube; and

attachment means for securing the gauge to the lure and bait end of the fishing line.

5,191,720

SPOT WELDING INSPECTING APPARATUS

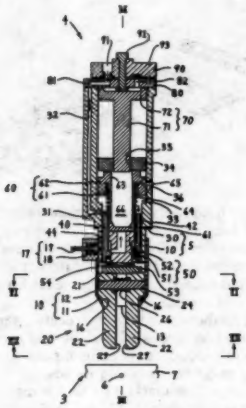
Yoshimi Miura, 5-16, Itsukaichi 2-chome, Saeki-ku, Hiroshima-shi, Hiroshima-ken 731-51, Japan, and Masaaki Miura, 12-35, Miyauchi 1-chome, Hatsukaichi-shi, Hiroshima-ken 738, Japan

Filed Oct. 2, 1991, Ser. No. 771,320
Claims priority, application Japan, Oct. 3, 1990, 2-267107; Feb. 3, 1991, 3-35673
Int. Cl.[5] G01B 5/00
U.S. Cl. 33—785 5 Claims

1. An inspection apparatus for spot welds, comprising:

an elongated tubular casing having a central longitudinal axis, said casing comprising a cylinder and a front cover at the front end of said cylinder, said front cover having tapered internal surfaces which are disposed symmetrically with each other with respect to said central longitudinal axis;

a pair of laterally spaced-part symmetrical knife gauges projecting frontwardly from said front cover and mounted for lateral movement toward and away from each other, said knife gauges having rear end surfaces and portions engaging said tapered surfaces for lengthwise



movement therealong whereby to change the lateral spacing between said knife gauges;

an air-operated hammer disposed inside said casing for continually applying forcible strokes to said rear end surfaces of said knife gauges;

a valve case disposed inside said cylinder for selectively supplying air for operating said hammer; and

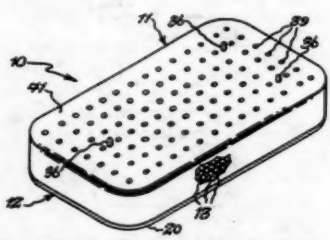
a piston for applying pressure to said hammer when said valve case is not supplying air for operating said hammer.

5,191,721

MICROWAVE REGENERABLE DESICCANT CARTRIDGE

Samuel A. Incorvia, Tonawanda, and Joseph L. Iwaniszek, Lancaster, both of N.Y., assignors to Multiform Desiccants, Inc., Buffalo, N.Y.

Filed Sep. 30, 1991, Ser. No. 767,490
Int. Cl.[5] F26B 3/34
U.S. Cl. 34—1 P 17 Claims



1. A microwave regenerable and reusable desiccant cartridge comprising a casing fabricated of plastic which transmits microwave energy without itself being deleteriously affected, apertures in said casing for permitting communication between the inside of said casing and the environment in which said casing is located, desiccant material within said casing for

adsorbing moisture which passes through said apertures from the environment and for being regenerated by microwave energy which drives moisture from said desiccant material through said apertures, said casing having two opposing walls which are larger than the side walls thereof, and said apertures being located in said opposing walls.

5,191,722

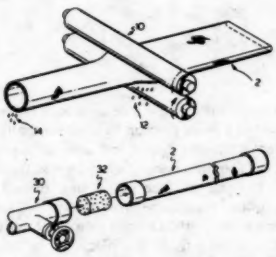
METHOD AND ARRANGEMENT FOR DRYING OF FIRE HOSES

Baldev K. Nayyar, Markham; Gabor Kellner, Toronto; Peter Pinchis, Thornhill; Joseph Martinek, Toronto; Anthony Ayuso, Toronto, and Julius Weiss, Toronto, all of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Province of Ontario, Toronto, Canada

Filed Jun. 22, 1992, Ser. No. 901,945

Int. Cl.[5] F26B *7/00, 5/14*

U.S. Cl. 34—12 **13 Claims**



9. A method of drying a fire hose of the type having a fabric outer layer and an inner liner layer, said method comprising compressing the hoses to remove water therefrom, stripping water from the interior of the hose by forcing a plug through each hose with the plug in close contact with said inner liner whereby water on the surface of said inner liner is removed from the hose, and exposing said hoses to a drying arrangement where drying air is circulated about said hoses to remove water by evaporation from said fabric layer.

5,191,723

APPARATUS AND METHOD FOR RECOVERING SPENT LIME FOR USE AS A NUTRITIONAL FLOWING AGENT FOR POULTRY AND ANIMAL FEEDS

William E. Herzog, St. Joseph, Mo., assignor to Herzog Contracting Corporation, St. Joseph, Mo.

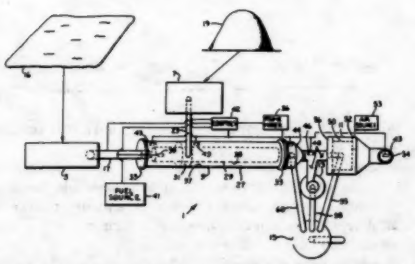
Filed Jan. 9, 1991, Ser. No. 639,195

Int. Cl.[5] F26B *7/00*

U.S. Cl. 34—12 **14 Claims**

MICROFICHE APPENDIX INCLUDED

(051920056 Microfiche, Pages)



1. A method for recovering spent lime cake from sugar beet and sugar cane manufacturing processes for use in animal feeds, the steps comprising:

(a) thermally removing excess moisture from a mixture consisting essentially of spent lime from sugar beet and sugar cane manufacturing processes with a dryer;

(b) mechanically breaking down said mixture into its particulate constituents such that some of said particulate constituents become air-borne and some of said particulate constituents remain non-air-borne;

(c) directing said air-borne particulate constituents through a dust collector for collecting said air-borne particulate constituents;

(d) conveying said non-air-borne particulate constituents from said dryer and said particulate constituents collected in said dust collector to a product storage bin; and

(e) incorporating said particulate constituents as a dry additive to animal feed in sufficient quantity to function as a flowing agent.

5,191,724

METHOD AND A SYSTEM FOR GRINDING AND DRYING A SOLID FUEL

Daniel Fontanille, Rambouillet, France, assignor to Stein Industrie, Velizy-Villacoublay, France

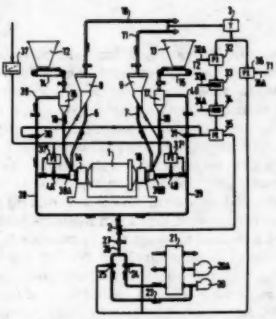
PCT No. PCT/FR91/00180, § 371 Date Oct. 29, 1991, § 102(e) Date Oct. 29, 1991, PCT Pub. No. WO91/14133, PCT Pub. Date Sep. 19, 1991

PCT Filed Mar. 6, 1991, Ser. No. 775,951

Claims priority, application France, Mar. 6, 1990, 90 02804

Int. Cl.[5] F23K *1/00*

U.S. Cl. 34—12 **2 Claims**



1. A method of adjusting the operation of apparatus (**1**) for grinding a solid fuel material having a variable moisture content, and for drying said material, said apparatus (**1**) being fed with material via pre-drying means (**16, 17**) in which there is a gas feed (**20, 24, 25**) whose temperature can be adjusted over a range, the gas being split into two fractions, one fraction of the gas passing through the grinding apparatus (**1**) and the other fraction of the gas being sent to the pre-drying means (**16, 17**), the flow rate Q_1 of the fraction of the gas passing through the apparatus (**1**) being adjusted to be proportional to the quantity Q_c of material to be ground, the fraction Q_2 of gas passing through the pre-drying means (**16, 17**) rejoining the fraction Q_1 of gas leaving the apparatus (**1**) together with the ground material, and all of the gas and ground material being sent via conveyor pipework (**10, 11**), the temperature T of the gas and the ground material in said conveyor pipework (**10, 11**) being measured, the temperature of the feed gas being adjusted as a function of the difference between a set temperature T_1 and the measured temperature T in such a manner as to cause the measured temperature T to move closer to T_1, the flow rate of the gas fraction feeding the pre-drying means (**16, 17**) being adjusted in such a manner that the total gas flow rate Q_4 in the conveyor ducting (**10, 11**) lies between a minimum flow rate

Q_{Am} and a maximum flow rate Q_{AM}, the method being characterized in that a temperature T_2 is set for the mixture of gas and ground material, which temperature is lower than T_1, T_2 depending on the moisture content of the material, and in that when the minimum gas flow rate Q_{Am} does not suffice for reaching the set temperature T_2, with the temperature of the feed gas raised to the maximum of its range, then the flow rate Q_2 of the gas fraction sent to the pre-drying means (16, 17) is increased by the amount necessary for reaching the temperature T_2.

5,191,725

VENTING SYSTEM FOR HEAT TREATING FLAT MATERIAL WEBS

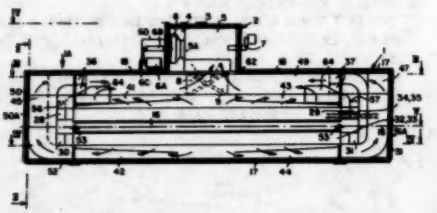
Horst Wohlgenannt, Bregenz, and Adolf Mueller, Weissensberg, both of Fed. Rep. of Germany, assignors to Lindauer Dornier Gesellschaft mbH, Lindau, Fed. Rep. of Germany

Filed Mar. 22, 1991, Ser. No. 673,803

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1990, 4009313

Int. Cl.[5] F26B *13/00*

U.S. Cl. 34—155 **10 Claims**



1. An apparatus for treating a flat material web with a gaseous treatment medium, comprising means having a central cross-axis (16) for substantially enclosing a treatment chamber, an inlet slot in said housing means for passing a material web into said treatment chamber, an outlet slot in said housing means for withdrawing said material web from said treatment chamber in a defined web motion direction, treatment means arranged for applying said treatment medium to a surface of said material web, said treatment means comprising blowing slot nozzle means for blowing treatment medium onto a surface of said material web, said blowing nozzle means extending across said material web motion direction and having blowing slot nozzles facing said material web, said treatment means further comprising a venting unit (2) including a single blower (6) centrally mounted relative to said housing means, a compression chamber in said venting unit communicating with a blower outlet, a suction chamber in said venting unit communicating with a blower inlet, said treatment means further comprising first flow guide means including two treatment medium mixing chambers (10, 11), one of said mixing chambers being arranged on one side of said single blower, the other of said two mixing chambers being arranged on the other side of said single blower, both mixing chambers being arranged in parallel to said central cross-axis (16) of said housing means on opposite sides of said cross-axis (16), said first flow guide means comprising distribution channels (18, 19, 20, 21; 24, 25, 26, 27) communicating said mixing chambers with said blowing nozzle means (32, 33, 34, 35) in said housing means, said treatment means further comprising suction channel means including suction nozzles communicating with said blowing slot nozzles for removing treatment medium from said web, and second flow guide means leading in said housing means to said suction chamber from said suction channel means for returning treatment medium to said suction chamber, said first and second flow guide means forming together with said single blower a substantially closed treatment medium circulating circuit, and wherein said second flow guide means include a return flow central suction channel (49) leading to said suction chamber, said second flow guide means leading into said central suction channel, whereby used treatment medium must follow a defined suction path in a controlled manner and cannot adversely influence a temperature of incoming treatment medium.

5,191,726

ASYMMETRIC BALLET SHOE AND PAIR OF SUCH SHOES

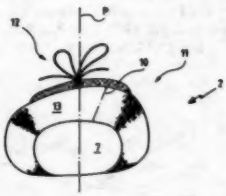
Jean-Marie Vallee, Asnieres, France, assignor to Repetto, Paris, France

Filed Apr. 30, 1992, Ser. No. 876,860

Claims priority, application France, May 3, 1991, 91 05467

Int. Cl.[5] A43B *5/12*

U.S. Cl. 36—88 **6 Claims**



1. Ballet shoe comprising a sole to which is fixed a flexible upper stiffened in a front part up to a substantially flat end, by a vamp covered by said upper and adapted to surround the front part of the foot of a dancer wherein said front part of said upper has on its upper surface a peak line formed by points of maximum height of transverse cross-sections of said front part of said upper which is offset to one side of a longitudinal plane of the shoe, diverging from this plane in the direction away from the end of the shoe, said front part of said upper being joined transversely on the other side of said longitudinal plane to an area forming a flat widening in the direction away from said end, whereby said shoe is specifically intended for a respective foot of a dancer, said peak line being adapted to run along the top of the big toe of the foot in question.

5,191,727

PROPULSION PLATE HYDRODYNAMIC FOOTWEAR

Daniel T. Barry, Ann Arbor; Raymond M. Fredericksen; Robert W. Soutas-Little, both of Okemos, and Ruk R. Peterson, Grand Rapids, all of Mich., assignors to Wolverine World Wide, Inc., Rockford, Mich.

Continuation-in-part of Ser. No. 510,671, Apr. 18, 1990, Pat. No. 5,052,130, which is a continuation-in-part of Ser. No. 131,309, Dec. 8, 1987, abandoned, which is a continuation-in-part of Ser. No. 942,245, Dec. 15, 1986, abandoned. This application Aug. 8, 1991, Ser. No. 743,483

The portion of the term of this patent subsequent to Oct. 1, 2008, has been disclaimed.

Int. Cl.[5] A43B *13/18, 13/12, 13/24*

U.S. Cl. 36—107 **22 Claims**

1. An athletic shoe comprising an upper, and a sole assembly attached to said upper;

said sole assembly comprising an outsole, a midsole and a spring plate therebetween, said sole assembly having a heel region with a lateral portion and a medial portion, an arch region and a forefoot region which includes a metatarsal head region and a toe region;

said spring plate extending from beneath the medial portion of the heel region of said shoe, through the arch region of

said shoe to and beneath the metatarsal head region and toe region of said shoe;

said spring plate in said heel region extending primarily beneath the medial portion of said heel region and not significantly beneath the lateral portion of said heel region, leaving the lateral portion of said outsole in said heel region in engagement with the lateral portion of said midsole in said heel region;

said midsole having a cavity in said heel region;

a fluid dynamic pad in said cavity extending in both said medial and said lateral portions of said heel region, above said spring plate in said medial region but not said lateral region.

5,191,728

SKI BOOT HAVING A REAR SPOILER, A FRONT CUFF AND A LINKAGE, WHEREIN THE LINKAGE EXTENDS FROM LATERAL SPACED LOCATIONS AT THE SIDES OF THE BOOT TO ANCHORAGE POINTS

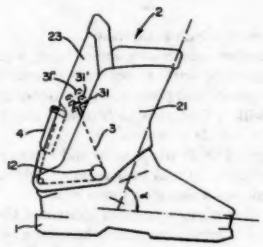
Jean Paris, Sevier, and Claude Perrissoud, Saint-Jorioz, both of France, assignors to Salomon S.A., Annecy Cedex, France

Filed Mar. 5, 1990, Ser. No. 488,975

Claims priority, application France, Mar. 6, 1989, 89 02891

Int. Cl.[5] A43B *5/04*

U.S. Cl. 36—121 **25 Claims**



1. A ski boot comprising:

(a) a shell base having an upper journalled on said shell base around a first transverse axis at two laterally spaced locations, said upper comprising:

(i) at least one cuff having two rearwardly extending lateral extensions; and

(ii) a rear spoiler, said rear spoiler being journalled on said lateral extensions around a second transverse axis, said second transverse axis being spaced apart from said first transverse axis, said rear spoiler comprising anchorage points for said linkage, said anchorage points being located on respective opposite sides of the boot;

(b) an inextensible means extending between said two laterally spaced locations and being in contact with said rear spoiler at at least one location spaced from said second transverse axis, said inextensible means being formed by:

(i) at least two portions of a linkage positioned between said first transverse axis and said anchorage points located on said spoiler; and

(ii) a portion of said linkage on said rear spoiler between said anchorage points; and

(c) means for tensioning said inextensible means comprising a tensioning lever mounted on said rear spoiler, wherein said linkage has a pair of ends which are anchored at a respective one of said anchorage points on said rear spoiler, and wherein said linkage extends around said first transverse axis and is connected to said tensioning lever.

5,191,729

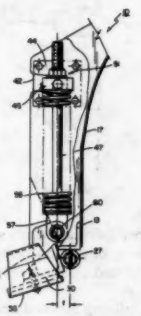
TRIP APPARATUS FOR MOLDBOARD ASSEMBLY

Jan H. Verseef, Clayton, N.Y., assignor to Frink America, Inc., Clayton, N.Y.

Filed Sep. 30, 1991, Ser. No. 767,477

Int. Cl.[5] E01H *5/04*

U.S. Cl. 37—232 **19 Claims**



16. A method of biasing a trip blade unit of a moldboard assembly that includes the steps of

pivotally mounting at least one trip blade unit beneath a moldboard so that the unit rotates between an operative plowing position and a fully tripped position,

holding the unit in the operative position under an initial predetermined moment, and

controlling the moment force acting upon the unit to increase the force from a first initial level to a second higher level and then decrease the force to a third lower level which is less than said first initial level as the trip blade unit moves from said operative position into said fully tripped position.

5,191,730

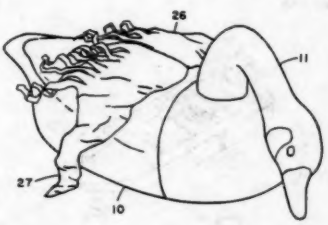
WING ATTACHMENT FOR BIRD DECOYS

Bruce Balmer, 75 Fremont St., P.O. Box 271, Douglas, Mich. 49406-0271

Filed Oct. 2, 1990, Ser. No. 591,949

Int. Cl.[5] A01M *31/06*

U.S. Cl. 43—3 **4 Claims**

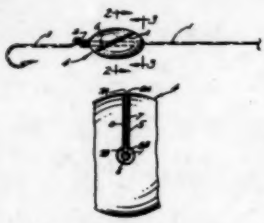


1. In combination with a bird decoy, said decoy having a body portion and a head-neck portion, a wing attachment comprising:

at least one sheet of unreinforced material having a wing configuration having a leading and a trailing edge, said material having a degree of flexiblity such that it is incapable of cantilever self-support, at least a major portion of said sheet normally drooping down about said body portion in the absence of wind action; and

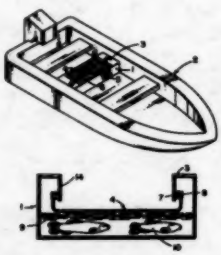
fastening means disposed along said body portion adjacent the top center line thereof, and adapted to secure said sheet of material thereto.

5,191,731
FISHING LURE BODY
Charles E. Peterson, 273 Shore Dr., St. Helens, Oreg. 97051
Filed Sep. 16, 1991, Ser. No. 760,613
Int. Cl.[5] A01K 85/00
U.S. Cl. 43—42.36 2 Claims



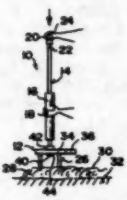
1. In combination,
an elongate member having a fishhook at one end,
a nonmetallic fishing lure body of monolithic construction for attachment to said elongate member, said body including,
a central portion defining an axial opening of a cross section greater than that of the elongate member to receive the elongate member in a loose manner, said axial opening comprising means for allowing rotation of said lure body about said elongate member when the lure body is drawn through the water,
internal wall surfaces of said body defining a slot in communication with said opening, said wall surfaces spaced apart a distance less than the maximum cross sectional dimension of the opening and less than the cross section of the elongate member for retention of the elongate member in said opening, and
said body of a material having a degree of resiliency to permit momentary deformation of the wall surface during lateral passage of the elongate member therealong.

5,191,732
FISHING LIVE WELL COVER DEVICE
Marvin Berdinsky, 3820 Parapet Dr., Cocoa, Fla. 32926; Robert P. Smithwick, II, 250 Spruce Ave.; Michael J. Wilson, 235 Spruce Ave., both of Merritt Island, Fla. 32953, and Charles J. Antetomaso, 585 Parkside Ave., Merritt Island, Fla. 32952
Filed Jul. 8, 1991, Ser. No. 726,890
Int. Cl.[5] A01K 97/10
U.S. Cl. 43—55 9 Claims



1. A device for covering a holding container for fish and aquatic animals comprising:
a plurality of parallel single-layer resilient web-like members spaced apart from each other;
a common connecting border means for said resilient members at each end; and
attachment means on the common connecting border means and matching attachment means on the side wall of the holding container for attaching the common connecting border means to the holding container wherein the attachment means comprises hook and loop fastening material attached to one side of the common connecting border means and matching fastening means on the walls of the holding container.

5,191,733
MOLE SPEAR
Virdean N. Withrow, R.R. #1, Box 57, Granville, Ill. 61326
Filed Apr. 20, 1992, Ser. No. 872,689
Int. Cl.[5] A01M 23/30
U.S. Cl. 43—124 2 Claims



1. A mole spear which comprises:
a) a base member said base member being a plate having a central aperture with a foot step extending outwardly from one side of said plate, so that a foot of the person can engage with a foot step to further force a plurality of spikes into a mole tunnel;
b) an elongated shaft attached to and extending upwardly from the center of said base member wherein said elongated shaft has a threaded lower end;
c) a sleeve that slides upon said elongated shaft, in which said sleeve is gripped by a first hand of a person;
d) a handle affixed to an upper end of said elongated shaft, in which said handle is gripped by a second hand of the person;
e) said plurality of spikes attached to and extending downwardly from said base member, so that the second hand of the person can press down upon said handle to drive said elongated shaft through said sleeve to force said spikes into a mole tunnel beneath a raised surface of the earth and pierce a mole therein to kill it
said spikes being a pair of U-shaped double spikes;
f) a retainer cap threaded onto said threaded lower end of said elongated shaft, before said threaded lower end is inserted through said central aperture in said plate;
g) a nut threaded onto said threaded lower end of said elongated shaft after said threaded lower end is inserted through said central aperture in said plate, so that said elongated shaft will be secured to said plate; and
h) a second plate having a central aperture, and a plurality of holes, each located at one corner of said second plate, said second plate positioned aligned under said first plate, with each said U-shaped double spike extending through two of said corner holes and sandwiched between said first plate and said second plate, so that said threaded lower end of said elongated shaft will extend through said first central aperture in said first plate and said second central aperture in said second plate with said nut threaded thereon to secure said elongated shaft and said U-shaped double spikes thereto.

5,191,734

BIODEGRADABLE LATEX WEB MATERIAL

Robert E. Weber, Marietta, and Mary L. Delucia, Roswell, both of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Apr. 24, 1990, Ser. No. 513,656
Int. Cl.[5] A01G 31/00
U.S. Cl. 47—9 5 Claims

1. An agricultural row cover comprising:

a fibrous web including a plurality of cellulose fibers, said web having a breaking length of at least 0.80 kilometers and no greater than about 6.20 kilometers,

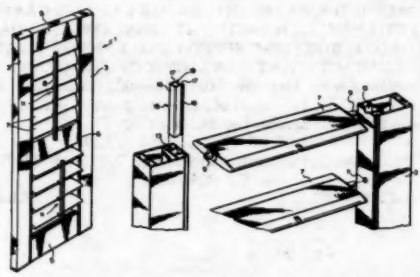
said web being treated with a saturant containing a latex in an add on from about 16 to about 80 dry parts saturant per 100 parts fiber by weight to form a latex web composite, said web composite having an average strength of at least about 50 kg/cm^2 and a ratio of web strength to dry strength ranging from about 0.2 to about 0.6.

5,191,735

MOVABLE LOUVRE CLAMP

Alan Ross, Ontario, Canada, assignor to Dominion Plastics Inc., Woodbridge, Canada

Filed Apr. 6, 1992, Ser. No. 863,878
Int. Cl.[5] E05F 17/00
U.S. Cl. 49—74 L 3 Claims



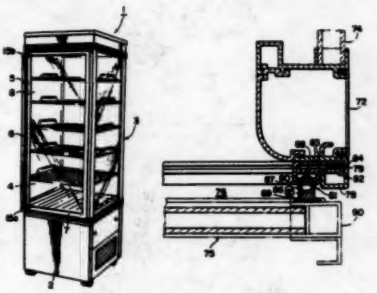
1. A louvred structure comprising a frame with opposing first and second styles, each style having an interior side with a plurality of pivot pin openings therethrough, a plurality of pivotal louvres having louvre pins fitted in the pin openings in said styles, at least said first style being hollow and fitted with a flexible louvre pin clamp extending lengthwise therealong, said clamp comprising an elongated body of flexible material defined by a pair of side walls and a clamp base to which said side walls are flexible connected, said side walls having free ends which diverge from one another forming a clamp mouth facing the interior side of and spanning a plurality of the pivot pin openings through said first style, said side walls converging toward one another between said clamp mouth and said clamp base to define a louvre pivot pin grip region narrower than said clamp mouth, said clamp mouth providing a cam guide of said louvre pivot pins into said grip region.

5,191,736

CABINET WITH DOOR SEAL

Katsuyoshi Iino; Ryoichi Takahashi, both of Maebashi, and Shoji Takeuchi, Gunma, all of Japan, assignors to Sanden Corporation, Gunma, Japan

Continuation of Ser. No. 543,534, Jun. 26, 1990, abandoned, which is a division of Ser. No. 378,029, Jul. 11, 1989, abandoned. This application Jul. 11, 1991, Ser. No. 729,874
Claims priority, application Japan, Jul. 12, 1988, 63-92183; Jul. 12, 1988, 63-92184; Jul. 12, 1988, 63-92188; Jul. 18, 1988, 63-94078
Int. Cl.[5] E06B 7/16
U.S. Cl. 49—484.1 8 Claims



1. A display case comprising:

a goods display compartment;

a frame fixedly mounted to said compartment, said frame enclosing an access opening providing access to said compartment, said frame having two inner side surfaces on opposite sides of said access opening generally facing each other;

a door which opens and closes said access opening; and

a seal support plate extending transversely of said access opening between said inner side surfaces, said seal support plate having connected thereto a sealing means for sealing said compartment at a portion of said door, at least one of said seal support plate or said frame inner side surfaces having grooves extending to an outer end thereof, and the other of said seal support plate or said frame inner side surfaces having flange portions extending therealong, whereby said flange portions are fitted into said grooves from said outer end for laterally removably attaching said seal support plate to said frame;

said seal support plate having an opening therethrough; and said sealing means being connected to said seal support plate and extending substantially around the periphery of said opening therein.

5,191,737

HOLLOW GRINDING FIXTURE

Lowell G. Snoddy, 419 Warner St., N.W., Huntsville, Ala. 35805

Filed Aug. 22, 1990, Ser. No. 570,889
Int. Cl.[5] B24B 3/36
U.S. Cl. 51—218 R 12 Claims

1. A fixture assembly for retaining a workpiece, such as the edge of a knife, against a grinding device having a grinding element for performing a hollow grinding operation of said edge comprising:

means for supporting said fixture assembly in fixed relation to said grinding device;

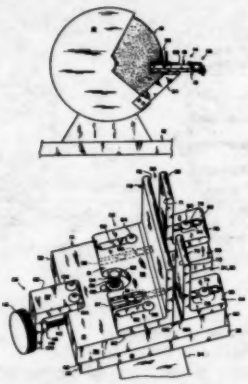
an upper and lower plate mounted for relative movement therebetween;

workpiece supporting means mounted on said first of said plates for movement therewith toward and away from said grinding element;

spring-biased securing means for securing said plates together;

manual adjusting means interconnected between said plates for imparting said relative movement thereto, whereby said workpiece supporting means is disposed for retention of said edge against said grinding element during the grinding operation;

said upper plate being provided with an upper surface having said workpiece supporting means secured thereto and a lower surface having a first guide means disposed thereon;



said lower plate including upper and lower surfaces, said upper surface of said lower plate having a second said guide means disposed thereon for coaction with said first said guide means of said upper plate; and

said workpiece supporting means including a first upstanding support plate secured to said upper plate and second and third upstanding support plates secured in spaced, end-to-end relation on said upper plate, said first support plate being disposed in spaced relation with said second and third support plates to provide a workpiece receiving space therebetween.

5,191,738

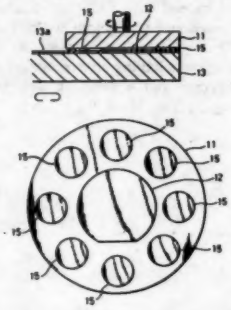
METHOD OF POLISHING SEMICONDUCTOR WAFER

Yasuaki Nakazato, Koushoku, and Hiroo Ogawara, Nagano, both of Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 539,180, Jun. 18, 1990, abandoned.
This application Oct. 25, 1991, Ser. No. 781,644
Claims priority, application Japan, Jun. 16, 1989, 1-153748
Int. Cl.[5] B24B *37/04*
U.S. Cl. 51—283 R **14 Claims**

1. In a method of polishing a semiconductor wafer wherein said semiconductor wafer is bonded to the plane of a plate and polished to a desired thickness by pressing said semiconductor wafer against a side of a rotating turntable, the improvement wherein said semiconductor wafer is bonded to a central area of the plane of said plate and a thickness regulating member, at least a surface layer of which is made of a material slower to polish than said semiconductor wafer, is circumferentially arranged around said semiconductor wafer on the plane of said plate in order to control the thickness of said semiconductor wafer, said thickness regulating member has a matrix made of silicon and said surface layer which member has a matrix made of silicon and said surface layer which is formed on said matrix facing the side of said turnable is a silicon oxide film constituting the material, and said semiconductor wafer and said thickness regulating member are pressed against the side of the rotating turntable to polish said semiconductor wafer, said thickness regulating member bearing part of the pressure applied to said semiconductor wafer during the polishing process.

12. In a method of polishing a semiconductor wafer wherein said semiconductor wafer is bonded to the plane of a plate and polished to a desired thickness by pressing said semiconductor wafer against a side of a rotating turntable, the improvement wherein said semiconductor wafer is bonded to a central area of the plane of said plate and a thickness regulating member, at least a surface layer of which is made of a material slower to polish than said semiconductor wafer, is circumferentially



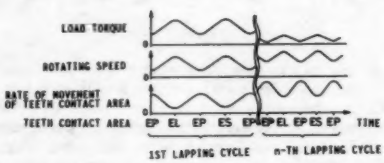
arranged around said semiconductor wafer on the plane of said plate in order to control the thickness of said semiconductor wafer, wherein said thickness regulating member is made of a material selected from the group consisting of quartz, plastic, sapphire and metal and said semiconductor wafer and said thickness regulating member are pressed against the side of the rotating turntable to polish said semiconductor wafer, said thickness regulating member bearing part of the pressure applied to said semiconductor wafer during the polishing process.

5,191,739

METHOD AND APPARATUS FOR LAPPING GEAR TEETH WHILE CHANGING AT LEAST ONE OF LOAD TORQUE, ROTATING SPEEDS AND RATE OF TEETH CONTACT POINT MOVEMENT OF THE GEARS

Norihiko Kondo, Okazaki; Mikio Tsuzuki, Nishio, and Yoshinori Miura, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Dec. 5, 1990, Ser. No. 622,596
Claims priority, application Japan, Dec. 7, 1989, 1-318192
Int. Cl.[5] B24B *37/00*
U.S. Cl. 51—287 **12 Claims**



1. A method of lapping teeth of a pair of gears comprising the steps of:

rotating one of said pair of gears in engagement with another of said pair of gears while applying a load torque to said another gear;

moving said pair of gears relative to each other during the step of rotating such that a teeth contact area of the gears is moved in a direction of width of contacting faces of the teeth of the gears to lap the face of each tooth of the gears over a substantially entire width thereof; and

changing at least one of said load torque applied to said

another gear and a rotating speed of said one gear, during the step of moving said pair of gears relative to each other, in a predetermined pattern in synchronization with a movement of said teeth contact area in said direction of width of the contacting faces of the gears.

5,191,740

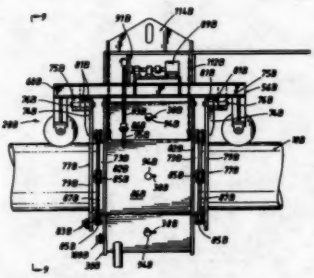
APPARATUS FOR CLEANING PIPE

James L. Rose, Houston, Tex., assignor to E. B. Thomas, Houston, Tex.

Continuation of Ser. No. 646,499, Jan. 28, 1991, Pat. No. 5,107,633, which is a continuation-in-part of Ser. No. 470,819, Jan. 26, 1990, abandoned. This application Feb. 24, 1992, Ser. No. 840,286

Int. Cl.[5] B24C *3/06*

U.S. Cl. 51—429 **13 Claims**



1. A carriage adapted to be supported on the upper surface of a pipe for longitudinal movement along the pipe to clean the outside of the pipe; said carriage comprising:

an upper support frame having rollers for contact with the pipe to support the carriage thereon for travel along the pipe;

a housing having a pair of spaced ends with aligned openings therein adapted to receive the pipe therein, and an outer peripheral wall extending between said ends about said pipe to form a substantially enclosed chamber with said ends about the periphery of said pipe, said housing being divided into sections for fitting about the pipe and having a discharge opening for waste material from the cleaning operation;

means pivotally connecting said housing sections to each other for inward swinging movement relative to said pipe for assembly about said pipe to define said enclosed chamber about said pipe and for outward swinging movement for disassembly from said pipe;

a plurality of nozzles mounted within said housing between said spaced ends and spaced about the periphery of said pipe for the discharge of cleaning material within the enclosed chamber against the outer periphery of said pipe, said nozzles being mounted on said housing sections for pivotal movement therewith when said housing sections are assembled about said pipe and disassembled from said pipe;

means for moving said nozzles in a predetermined pattern relative to the outer periphery of said pipe for cleaning the outer periphery of said pipe;

collecting means adapted to receive said waste material from said discharge opening; and

conduit means between said discharge opening and said collecting means connected to said discharge opening to receive waste material from said cleaning operation.

5,191,741

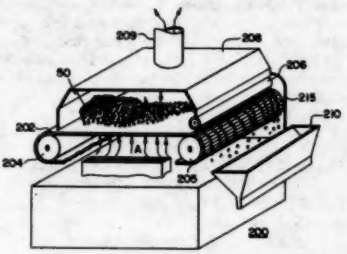
FLUIDIZED BED BOTTLE FILLING SYSTEM

Jay J. Jones, Willow Grove, Pa., assignor to McNeil-PPC, Inc., Milltown, N.J.

Filed Jul. 25, 1991, Ser. No. 735,482

Int. Cl.[5] B65B *1/30, 35/48, 37/16*

U.S. Cl. 53—475 **15 Claims**



1. Apparatus for counting a predetermined number of tablets and transferring the number of tablets to a means for filling bottles, the apparatus comprising:

a tablet bin for retaining a plurality of tablets the tablet bin having a vertical dimension and a lateral dimension;

a plurality of connected slat bars comprising a predetermined number of cavities and a plurality of orifices, the slat bars disposed beneath the tablet bin and adapted to move across the lateral dimension of the tablet bin the orifices being provided in sufficient size and placement for creating an airflow within the tablet bin sufficient to cause a plurality of tablets to exhibit the characteristics of a fluidized bed;

a vacuum airflow means for creating a negative pressure within each of the cavities; and

means for selectively disconnecting the vacuum airflow means from the cavities;

whereby as the slat bars move beneath the tablet bin the cavities are filled with tablets and after exit from beneath the tablet bin the tablets are transferred to a means for filling bottles.

5,191,742

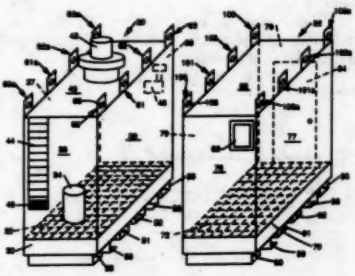
HAZARDOUS MATERIAL CONTAINER STORAGE BUILDING AND RELATED METHOD

Frederick W. Romig, Wexford, and Charles D. Ledford, New Alexandria, both of Pa., assignors to CID Associates, Inc., Leechburg, Pa.

Filed Apr. 2, 1991, Ser. No. 678,830

Int. Cl.[5] E04H *7/00*

U.S. Cl. 52—79.9 **26 Claims**



1. A hazardous material storage building for storing a plurality of hazardous material containers comprising:

a plurality of modules each having

a floor for supporting containers of hazardous material;

a containment sump disposed underneath said floor for collecting leakage from said containers; and

tube means underlying said containment sump;

said plurality of modules including a first and second module; and

said first module having a first module tube means and said second module having a second module tube means; and

mechanical joining means extending at least partially through said first module tube means and said second module tube means for securing said first module to said second module, whereby said first and second modules are formed into a single, unitary hazardous material container storage building.

5,191,743

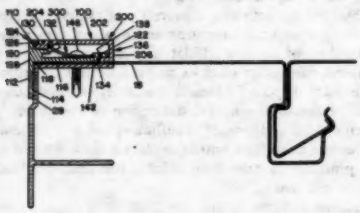
CONCEALING TRIM CAP ASSEMBLY FOR A WALL OR CEILING PANEL SYSTEM

J. Lynn Gailey, Clover, S.C., assignor to Alcan Aluminum Corporation, Cleveland, Ohio

Filed Feb. 12, 1991, Ser. No. 655,312

Int. Cl.[5] E04B *9/00*

U.S. Cl. 52—718.05 **13 Claims**



1. A concealing trim assembly for a wall or ceiling panel system, comprising:

a trim member fastenable to a channel member of a ceiling or wall panel support, the trim member having a base portion and first and second means for slidably retaining a trim cap;

means for fastening the trim member to the channel member;

a trim cap for concealing said means for fastening the trim member to the channel member, said trim cap having first and second edges matable with said first and second means for slidably retaining a trim cap;

at least one clip means for biasing said first and second edges of said trim cap against said first and second means for retaining a trim cap.

5,191,744

CONSTRUCTION ELEMENT

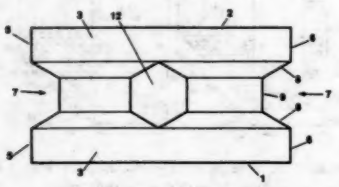
Keith D. Bowes, P.O. Box 557, Glen Innes, New South Wales, Australia

Filed May 16, 1991, Ser. No. 701,096

Claims priority, application Australia, May 17, 1990, PK 0198; Sep. 21, 1990, PK 2440

Int. Cl.[5] E04C *1/10*

U.S. Cl. 52—564 **8 Claims**



1. A construction element having front, back, top, bottom and end faces, each of said top, bottom and end faces containing a channel having side walls joined by a base and arranged so as to surround the periphery of said element and an aperture formed between the top and bottom faces, characterized in that the aperture is hexagonal in cross-section and further characterized in that in each channel each side wall forms an angle of approximately 120 degrees with the base of the channel.

5,191,745

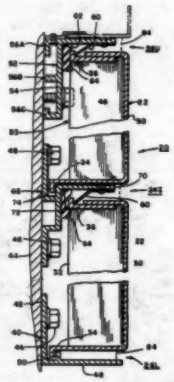
MOUNTING SYSTEM FOR PRE-FABRICATED PANELS

Thomas J. Story, 146 Locust St., Tuckerton, N.J. 08087

Filed Jun. 21, 1991, Ser. No. 719,260

Int. Cl.[5] E04B *2/38*

U.S. Cl. 52—589 **16 Claims**



1. A prefabricated building covering system having an arrangement of support members selectively arrayed on a buildings under-structure, said under-structure adapted for supporting the walls and roof of the building, said pre-fabricated system comprising:

(a) a plurality of panel members, each of said panel members having a predetermined thickness and shape, each of said panel members having an external surface, and internal surface, and at least two selectively positioned engaging means along its peripheral sides;

(b) a first of said support members being disposed in a substantially continuous array on said under-structure, said first of said support members being substantially L-shaped and having a substantially continuous channel formed in and on an interior portion of one leg member, said channel being selectively sized and shaped to receive one of said engaging means of each of said panel member;

(c) a second of said support members being substantially continuously disposed on said under-structure, said second support member being fastened in a selectively spaced and parallel relationship with said first support member, said second support member being substantially L-shaped, said second support member having at least one leaf spring member selectively positioned on an interior surface of its extending leg member and said leaf spring having its free end facing an interior corner of said second support member; and

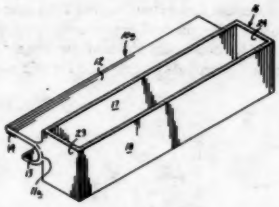
(d) wherein one of said engagement means of said panel member is retained in and by said channel in said first support member and a second of said engagement means of said panel member is removably retained by said leaf spring attached to said second support member and each retained panel member adapted for being individualy removed from said under-structure and said support members absent disturbing any adjacent panel member.

5,191,746

WINDOW SILL EXTENSION APPARATUS

Robert J. Russell, 2368 Randolph St., Huntingdon Valley, Pa. 19006

Filed Oct. 4, 1991, Ser. No. 771,111
Int. Cl.[5] E06B *1/00*; A01G *9/00*
U.S. Cl. 52—97 6 Claims



1. A window sill extension apparatus, comprising,

a "U" shaped unitary bracket, the bracket including a first plate arranged parallel to and coextensive with a second plate, wherein said first and second plates are joined together by a bracket central web having a window box fixedly mounted to said central web, wherein the first plate is defined by a first width and the second plate defined by a second width, the first width substantially greater than the second width, and the first plate defined by a first edge and the second plate defined by a second edge, the first edge and second edge arranged in a parallel spaced coextensive relationship relative to one another, with the first edge extending beyond the second edge wherein said apparatus further includes a plurality of threaded locking rods threadedly and orthogonally directed through said second plate in confrontation with a bottom surface of said first plate,

and

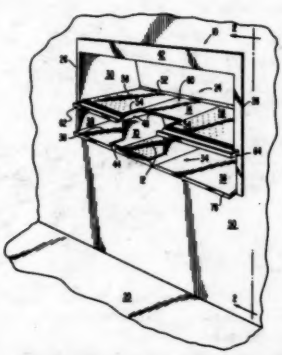
an adhesive strip mounted to a bottom surface of the first plate adjacent the first edge, wherein the adhesive strip extends beyond the second edge.

5,191,747

PREFABRICATED PASS-THROUGH SERVICE SYSTEM FOR FAST FOOD RESTAURANTS AND THE LIKE

David C. Tengquist, 10721 Keithwood Pkwy., Richmond, Va. 23236, and Patrick M. Kelly, 1133 Kittery Dr., Virginia Beach, Va. 23464

Filed May 8, 1991, Ser. No. 696,861
Int. Cl.[5] A47J *39/02*
U.S. Cl. 52—36.4 9 Claims



1. A prefabricated pass-through apparatus for installation in the walls of restaurants between the kitchen area and the customer area comprising:

an upper section including an upper shelf forming the bottom of said upper section, and extending substantially the entire width of said upper section for temporarily holding and passing through of food from the kitchen area to customer area;

a top for said upper section, two sides for said upper section connecting said top and said upper shelf;

a lower pass-through section having a lower pass-through shelf;

two sides for said lower section extending downward from said upper section sides;

a bin for food such as french fries located at said lower pass-through section having an accessible end from the kitchen area side and an accessible end from the customer area side; and

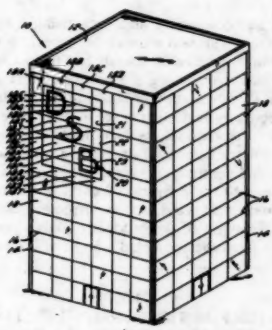
a recessed cut-out in said upper shelf located over said bin on the kitchen area side for making more accessible the placing of of food into said bin.

5,191,748

ILLUMINATED DISPLAY

Daniel G. Baughman, Rte. 1, Box 624, Fontana, Wis. 53125

Filed Dec. 12, 1991, Ser. No. 806,864
Int. Cl.[5] E04H *14/00*
U.S. Cl. 52—28 8 Claims



1. An illuminated display comprising a building having a plurality of transparent windows, shade devices for at least two adjacent ones of said windows, each of said shade devices including a portion of a display, said shade devices being adapted, only in combination, to transmit an artistic or informational display to observers of said building when light is passed therethrough from the interior of the building, means interiorly of said building for backlighting said shade devices, and wherein at least two of said adjacent shade devices include in combination a first portion of relatively lower transparency and a second portion of relatively greater transparency, at least said first portion being located on more than one shade device.

5,191,749

PLASTIC BAG DISPENSING APPARATUS FOR SUPERMARKETS INCORPORATING DEVICES FOR THE REGISTERING OF THE PURCHASED ITEMS

Angelo Cappi, Modena, and Renato Rimondi, Bologna, both of Italy, assignors to A.W.A.X. Progettazione E Ricerca S.R.L., Modena, Italy

Filed Oct. 25, 1991, Ser. No. 782,140
Claims priority, application Italy, Nov. 2, 1990, 21957 A/90
Int. Cl.[5] B65B *67/04*, *5/02*, *5/08*
U.S. Cl. 53—502 5 Claims

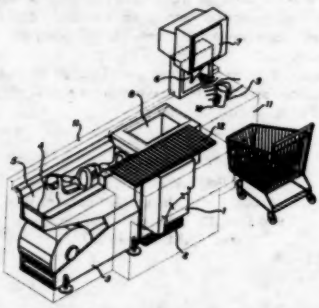
1. Apparatus for self-serving scanning, registering and bag-

ging a product purchased in a supermarket, the product having product information concerning the product imprinted on a label on packaging of the product, comprising:

a bag dispensing and opening unit (1) for dispensing and opening a single flexible bag from a continuous web of successively joined, preformed flexible bags;

a reel supporting unit (3) for supporting the continuous web of flexible bags and for feeding the web to said bag dispensing and opening unit (1);

a balance (2) for determining the actual weight of the product and for providing and output indicating the actual weight of the product; and



a scanning and computing unit comprising a computer (7) and a scanner (6), said scanner (6) detecting the product information imprinted on the label on the packaging of the product and transmitting the product information to the computer (7) said computer (7) using the product information detected by said scanner (6) to determine a projected weight of the product, said computer (7) receiving the output from the balance (2) indicating actual weight of the product, said computer (7) comparing the actual weight of the product to the projected weight of the product, and said computer (7) providing an output indicating whether the actual weight of the product exeeds a predetermined deviation from the projected weight of the product.

5,191,750

APPARATUS FOR THE FORMING, FILLING AND CLOSING OF BAGS MADE FROM A HEAT-SEALABLE SHEET

Roman Kammler, Worms, Fed. Rep. of Germany, assignor to Rovema Verpackungsmaschinen GmbH, Fernwald-Annerod, Fed. Rep. of Germany

PCT No. PCT/DE91/00122, § 371 Date Sep. 23, 1991, § 102(e) Date Sep. 23, 1991, PCT Pub. No. WO91/12177, PCT Pub. Date Aug. 22, 1991

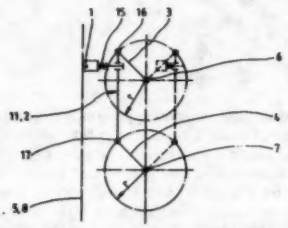
PCT Filed Feb. 18, 1991, Ser. No. 761,787

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1990, 4005078

Int. Cl.[5] B65B *51/30, 9/08*

U.S. Cl. 53—551 **14 Claims**

1. In an apparatus for the forming, filling and closing of bags made from a heat-sealable sheet utilizing means for forming a tube out of said sheet, a filling mechanism and a cross-sealing station, which includes at least two cyclically movable cross-sealing jaw means arranged on opposite sides of a vertically extending central axis on the apparatus for the tube, the improvement wherein each cross-sealing jaw means includes a pair of vertically spaced, synchronously driven, rotary drive members rotatable about vertically spaced and parallel axes, each rotary drive member having a connection means thereon spaced radially outwardly from said axes therefor, a support member connected to and extending between said connecting means on each said rotary drive member, the theoretical lines extending between (1) said spaced and parallel axies, (2) each of said axes and a respective one of said connection means, and (3) each connection means, defining a parallelogram, the thoretical line extending between said connection means always remaining parallel to the theoretical line extending between said axes and said central axis of the tube, wherein each cross-sealing jaw means further includes a cross-sealing jaw reciprocally movably supported on said support member for horizontal movement in a direction that is always perpendicular to said theoretical line extending between said spaced and parallel axes, and wherein resilient means is provided on said support member for elastically yieldably urging said cross-sealing jaw reciprocally movably supported on said support member for horizontal movement in a direction that is always perpendicular to said theoretical line extending between said spaced and parallel axes, and wherein resilient means is provided on said support member for elastically yieldably urging said cross-sealing jaw in said direction perpendicular to said theoretical line extending between said spaced and parallel axes toward said central axis of the tube so that when said cross-sealing jaw of each cross-sealing jaw means engages the tube on opposite sides of said central axis of the tube, said resilient means will yield as a space between said central axes and said support member decreases while effectively clamping said tube therebetween to facilitate the forming of a cross seal in the tube.



5,191,751

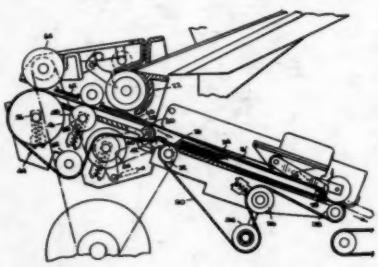
ENVELOPE OPENING APPARATUS

Joseph H. Marzullo, Brookfield; Sandra J. Graveson, Waterbury; Michael D. Ballard, Sandy Hook, and Curtis L. Mroziński, Redding, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Continuation of Ser. No. 438,029, Nov. 20, 1989, abandoned. This application Jan. 25, 1991, Ser. No. 646,482

Int. Cl.[5] B65B *43/26*

U.S. Cl. 53—569 **7 Claims**



1. Apparatus for inserting one or more documents into a waiting envelope having a flap, comprising:

a supporting frame;

means mounted in said frame for holding said envelope;

a movable, endless belt rotatably mounted in said frame for

transporting said one or more documents into said waiting envelope; and

a datum guide plate secured to said frame above said movable belt for holding open the flap of said envelope, and in cooperation with said movable belt for guiding said documents into said envelope; and

means for biasing a reach of said movable belt toward said datum guide plate, wherein said documents are transported between said datum guide plate and said reach, said datum guide plate defining a plane along which said documents are fed into said envelope.

5,191,752

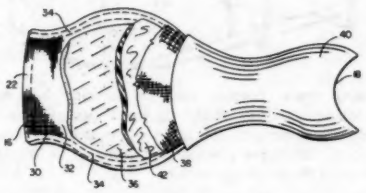
ELASTOMERIC GEL SADDLE

Robert J. Murphy, 602 Woburn Dr., Camillus, N.Y. 13031

Filed May 4, 1992, Ser. No. 878,365

Int. Cl.[5] B68C *1/02*

U.S. Cl. 54—44.5 **8 Claims**



1. Equestrian saddle for mounting a rider on a horse, comprising a tree frame including left and right longitudinal frame members, a rear cantle joining rear ends of the left and right frame members, and a front bow joining the front ends of the left and right frame members; at least one longitudinal web stretched between the bow and the cantle; a series of cross webs attached to the left and right frame members and stretched over the longitudinal web, said webs together forming a firm spring-like seat base; a seat cushion layer disposed on said seat base; a leather cover fitted over said cushion layer and said tree frame and forming a seat on which said rider is in sitting contact to define a contact area on the seat; and at least one panel disposed beneath the left and right frame members to cushion said tree frame as it rests on the horse; and the improvement wherein said seat cushion layer is formed of a silicone dielectric gel molded in a profile to match the web seat base and being approximately one-half inch thick and having the properties of (a) high energy absorbency to absorb shock and bounce of the rider on the saddle, and (b) resilient displaceability under both vertical and lateral forces to distribute the rider's sitting weight evenly over the contact area of the saddle and avoid pressure concentrations within the contact area.

5,191,753

HYDRAULIC DRIVE SYSTEM FOR A COTTON HARVESTER

Robert M. Fachini, Naperville, Ill.; John H. Chance; Daniel A. Miller, both of Amarillo, Tex., and David Brandt, Downers Grove, Ill., assignors to Case Corporation, Racine, Wis.

Filed Dec. 18, 1991, Ser. No. 809,950

Int. Cl.[5] A01D *46/10*

U.S. Cl. 56—10.9 **19 Claims**

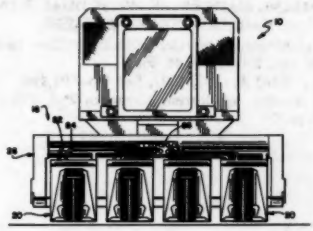
1. A system for hydraulically driving harvesting units of a cotton harvester, each harvesting unit including a rotatable harvesting mechanism for removing cotton from plants as the harvester is driven across a field, said hydraulic driving system comprising:

means mounted on the harvester for generating an actuating fluid pressure;

at least one fluid pressure driven motor mounted on each harvesting unit for individually driving the rotatable harvesting mechanism thereof in forward and reverse directions;

conduit means for directing fluid between each driven motor and an output of said actuating fluid pressure generating means; and

electro/hydraulic control means connected between the output of said actuating fluid pressure generating means and each of said motors for selectively and conjointly controlling the rotational direction of said motors and thereby controlling the harvesting mechanisms driven



thereby, said control means including first selectively actuatable ON/OFF electro/hydraulic valve means carried on the harvester for controlling actuating fluid pressure flow to each of said motors thereby selectively driving the harvesting mechanism of the harvesting units in a forward direction, and second selectively actuatable ON/-OFF electro/hydraulic valve means carried on the harvester for controlling actuating fluid pressure flow to each of said motors thereby selectively driving the harvesting mechanism of the harvesting units in a reverse direction.

5,191,754

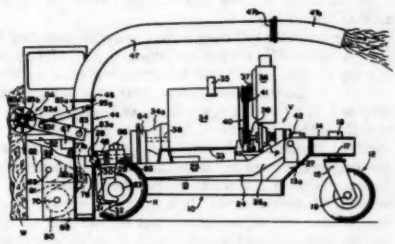
SELF-PROPELLED COMPOST WINDROW TURNING AND AERATING MACHINE AND METHODS OF OPERATING THE MACHINE

Norval K. Morey, Weidman, Mich., assignor to Wood Technology, Inc., Winn, Mich.

Filed Jun. 18, 1992, Ser. No. 900,577

Int. Cl.[5] A01D *84/00*

U.S. Cl. 56—13.3 **19 Claims**



1. In a self-propelled compost windrow turning and aerating machine:

a. a longitudinally extending vehicle main frame having a front and rear end, supported on front and rear wheels;

b. an upper longitudinally extending subframe having a front and rear end, supported from the rear end of said main frame for vertical movement relative to said main frame to raise and lower the front end of said subframe relative to said main frame;

c. a blower housing mounted on said subframe and having a material admitting opening leading to a rotary fan provided in said housing, the blower housing having a discharge opening with a spout for directing material blown

out of said housing by said fan to a desired discharge location;

d. rotary shaft driven material feeding mechanism supported on said subframe in advance of said blower housing for vertical movement therewith, for removing material from a compost windrow and delivering it to said material admitting opening; and

e. an engine drive system for powering said front wheels, said fan, and said material feeding mechanism.

5,191,755

COMBINE HARVESTER WITH DUAL RANGE VARIABLE SPEED BLOWER

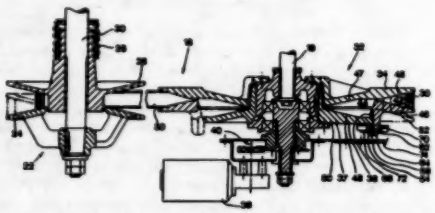
Jose G. T. Gryspeerdt, Nevele, Belgium, assignor to Ford New Holland, Inc., New Holland, Pa.

Filed Apr. 25, 1991, Ser. No. 691,196

Claims priority, application European Pat. Off., Apr. 26, 1990, 90201055.2

Int. Cl.[5] A01D *87/10*

U.S. Cl. 56—13.4 **8 Claims**



1. In a combine harvester having a mobile frame adapted for movement over a field; a threshing and separating means supported from said frame for receiving harvested grain from the field and separate grain crop from trash material in said harvested grain; a cleaning mechanism supported from said frame to received separated grain crop and trash material from said threshing and separating means and to effect a removal of said trash material from said grain crop, said cleaning mechanism having a fan rotatably mounted on said frame to blow air through said separated grain crop and trash material to make said trash material airborne for removal thereof from said combine harvester, said fan being provided with a drive mechanism for rotatably driving said fan, an improved fan drive mechanism comprising:

a variable diameter belt-type power transfer assembly having an adjustable sheave including a pair of opposing, coaxial flanges, one of said flanges being axially movable relative to the other said flange, both said flanges having opposed first belt engaging surfaces flaring radially outwardly with respect to each other so as to define a first, variable diameter belt receiving groove therebetween, and opposed second belt engaging surfaces flaring radially outwardly with respect to each other so as to define a second, variable diameter belt receiving groove therebetween; and the alignment of said second belt receiving groove being located radially inwardly with respect to the alignment of said first belt receiving groove.

5,191,756

MULCHING MOWER APPARATUS

John B. Kuhn, Rubicon, Wis., assignor to Deere & Company, Moline, Ill.

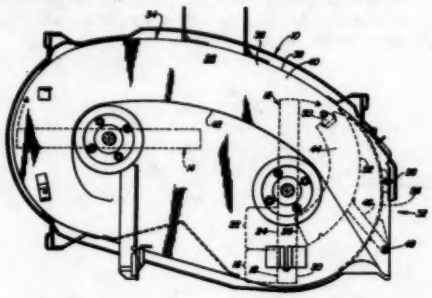
Continuation-in-part of Ser. No. 651,851, Feb. 4, 1991, abandoned. This application Feb. 3, 1992, Ser. No. 829,639

Int. Cl.[5] A01D *55/18*

U.S. Cl. 56—17.5 **35 Claims**

1. A mulching apparatus for use in a mower having a housing including a horizontally extending top wall and generally vertically extending side walls, a discharge outlet and a blade rotatable about an axis of rotation in a generally horizontal plane within the housing for cutting vegetation and for creating a circular path of air within the housing, said apparatus comprising:

a guide means coupled with the housing for guiding air and vegetation clippings radially inwardly and downwardly towards the blade for re-cutting of the vegetation; and



blocking means coupled with the housing for partially blocking a portion of the air and clippings from being discharged through the discharge outlet, said blocking means allowing a portion of the air to be discharged through the discharge outlet.

5,191,757

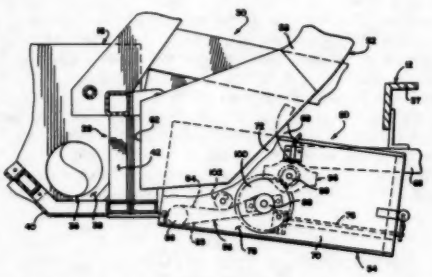
DISCHARGE CONVEYING SYSTEM FOR A COTTON HARVESTER

Robert L. Fachini, Naperville, Ill.; Kenneth D. Walser, Hereford, Tex.; John H. Chance, and Daniel A. Miller, both of Amarillo, Tex., assignors to Case Corporation, Racine, Wis.

Filed Nov. 18, 1991, Ser. No. 798,330

Int. Cl.[5] A01D *46/08, 46/10*

U.S. Cl. 56—30 **20 Claims**



8. A discharge conveying system for a cotton harvester having a material outlet through which harvested materials pass, said discharge conveying system comprising:

duct structure having a material inlet arranged adjacent said cotton harvester outlet;

an air system for directing an air stream through said duct structure such that lighter materials passing from the material outlet are drawn into the duct structure; and

conveyor means arranged beneath the duct structure for gravitationally receiving heavier materials passing from said outlet, said conveyor means including a conveyor defining a fore-and-aft extending and movable surface for conveying said heavier materials away from the inlet to said duct structure to facilitate the flow of lighter materials into said duct structure, said conveyor surface being

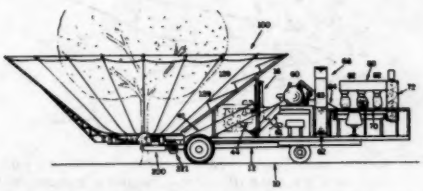
penetrable by stones, rocks and the like passing from the material outlet of said cotton harvester.

5,191,758

METHOD AND APPARATUS FOR NUT HARVESTING

Jean P. Cote, Prairie Lea, Tex., assignor to Continental Wholesale Florists, Inc., San Antonio, Tex.

Filed Sep. 11, 1991, Ser. No. 757,695
Int. Cl.[5] A01D *46/00, 46/22, 46/26*
U.S. Cl. 56—329 **45 Claims**



1. The method of harvesting tree-grown nuts formed in a hull and normally droppable with the hull when ripened, comprising the steps of:

surrounding the trunk of the tree with an inverted, cone-shaped canopy having an upper perimeter at least equal to the largest perimeter of the tree, said canopy being mounted on a self-propelled chassis and being movable from a folded position to a full conical position completely surrounding the tree by hydraulic means mounted on said chassis;

providing an opening in said canopy adjacent the lower portions thereof and located between the chassis and the tree trunk;

providing trunk-engaging arms beneath the bottom portions of said canopy and shaking the tree by said trunk-engaging arms;

directing the falling nuts, hulls and trash toward said opening in said lower end of said canopy;

catching nuts, full and empty hulls and other trash dislodged by shaking the tree, on a conveyor mounted on said chassis and disposed of below said canopy opening;

drawing an air stream in contact with said conveyor by a vacuum system mounted on said chassis to remove empty hulls and other trash having a weight less than the nuts from said conveyor, thereby leaving nuts and hulls containing nuts on said conveyor;

discharging the empty hulls and other trash on the ground to provide a mulch; and

passing said hulls containing nuts through a dehulling machine mounted on said chassis.

12. Apparatus for collecting nuts and hulls shaken from a nut-growing tree comprising, in combination:

a self-propelled chassis having an elevated operator's station adjacent one end of said chassis;

a nut-catching canopy;

means for mounting said canopy on said one end of said chassis in front of said operator's station;

said canopy being formed of a plurality of vertically pivotally interconnected conical segments forming in one position a transverse array across said one end of said chassis for transport, and in a second position, an inverted, generally cone-shaped configuration having a small-diameter bottom end constructed and arranged to surround the trunk of a nut tree to be harvested;

said canopy having a nonpivoted, vertically inclined wall portion positioned on said chassis between said operator's station and a tree to be harvested;

means on said chassis for engaging and shaking the nut tree to be harvested; and

at least one window mounted in said vertically inclined wall portion to provide operator visibility of the tree to be harvested during the approach of the chassis to the tree and during the nut-harvesting operation.

36. Apparatus for collecting nuts and hulls shaken from a nut-growing tree comprising, in combination:

a self-propelled chassis having an operator's station;

shaking means attached to said chassis for dislodging nuts from the tree;

nut-catching means attached to said chassis positioned below and surrounding the lower branches of the tree;

nut-dehulling means attached to said chassis; and

means for conveying the nuts received in said nut-catching means to said dehulling means whereby nuts are released from the hulls; and

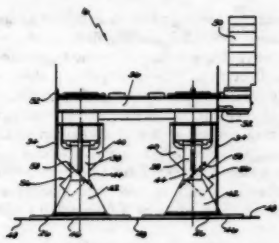
means for separating the nuts from the empty hulls.

5,191,759

BASECUTTER GEARBOX FOR A SUGAR CANE HARVESTER

Malcolm J. Baker, Bundaberg, Australia, assignor to Austoft Industries Limited, North Bundaberg, Australia

Filed Aug. 16, 1991, Ser. No. 746,391
Claims priority, application Australia, Aug. 17, 1990, PK1809
Int. Cl.[5] A01D *45/10*
U.S. Cl. 56—500 **2 Claims**



1. In a sugar cane harvester of the type having:

a frame including a pair of spaced apart plate-like side walls between which are mounted a base cutting assembly and feed rollers and billet cutting means which together define a path for the passage of sugar cane through the harvester,

the improvement in which the base cutting assembly comprises:

a gear box mounted to each side wall with a fastening means which connects the gear box to a mounting means provided on each side wall such that the gear box extends across the space between the side walls, above the path for the sugar cane, and projects beyond at least one of the side walls, the side wall beyond which the gear box projects having a recess extending from a lower edge thereof which receives the projecting part of the gearbox and allows the base cutting assembly to be moved laterally outwards from between the side walls of the harvester and through the recess for servicing;

a pair of spaced apart drive shafts extending downwardly from the gear box in the space between the side walls;

base cutting blade means carried at or adjacent a lower end of each of the drive shafts, and

a motor for driving the base cutting assembly being mounted on the gear box where it projects beyond the said one of the side walls so as to be on the outside of the space between the side walls.

5,191,760
PROCESS AND DEVICE FOR PIECING ON AN OPEN-END SPINNING DEVICE

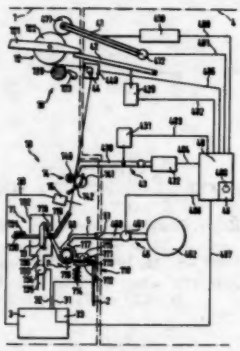
Anthony A. Ball, Reichertshausen, and Ulrich Rodiger, Ingolstadt, both of Fed. Rep. of Germany, assignors to Schubert & Salzer Maschinenfabrik AG, Ingolstadt, Fed. Rep. of Germany

Continuation of Ser. No. 467,022, Jan. 18, 1989, abandoned. This application Apr. 16, 1991, Ser. No. 686,871

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1989, 3903782

Int. Cl.[5] D01H *15/00*

U.S. Cl. 57—263 **10 Claims**



1. A process for piecing yarn on an open-end spinning device which includes means for feeding fiber to an opening device, means for conveying a stream of opened fibers in an air stream to a fiber collection surface of a spinning element, and means for drawing off spun yarn from said fiber collection surface of said spinning element, comprising the following steps:

(a) detecting a missing yarn in said spinning device;

(b) stopping the feed of fiber material to said opening device;

(c) shifting said air stream from said fiber collection surface;

(d) backfeeding a yarn to said fiber collection surface;

(e) restarting the feeding of a fiber tuft to said opening device;

(f) feeding said fibers into said shifted air stream;

(g) completely shifting the entire said air stream from said opening device to said fiber collection surface so that a single full air stream from said opening device is directed to said fiber collection surface and all of the fibers entering the air stream from said opening device air directed fully to said fiber collection surface before the fiber density in said completely shifted air stream attains full production density strength; and

(h) drawing off yarn from said fiber collection surface as the fiber density in said air stream increases to its full production strength.

5,191,761
AEROSPACE PLANE AND ENGINE

Charl E. Janeke, 261 Loveday Street, Muckleneuk; Pretoria, Transvaal Province, South Africa

Continuation of Ser. No. 657,881, Feb. 19, 1991, abandoned, which is a continuation of Ser. No. 409,411, Sep. 18, 1989, abandoned. This application Aug. 21, 1991, Ser. No. 751,601

Claims priority, application South Africa, Sep. 16, 1988, 88/6955

Int. Cl.[5] F02K *7/18*

U.S. Cl. 60—224 **13 Claims**

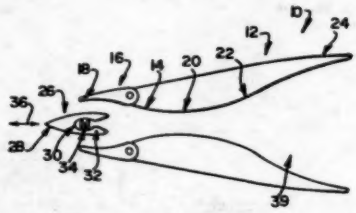
1. An engine suitable for use in an aerospace plane, the engine comprising:

a casing having an inlet end and an outlet end;

a diffuser positioned within said casing at said inlet end;

an intermediate passage within said casing and positioned downstream of, and in series with, the diffuser;

a diverging outlet within said casing and positioned downstream of, and in series with, the intermediate passage, the intermediate passage and an upstream portion of the diverging outlet forming combustion chamber within the casing;



a hollow aerodynamic core member having an internal cavity and a rearwardly directed outlet in communication with the internal cavity, the core member being shaped to have a closed pointed leading end such that the core member diverges rearwardly from said pointed leading end and is arranged in association with, and in proximity to, the diffuser; and

a rocket engine accommodated within the internal cavity of the core member and being operatively in alignment with the rearwardly directed outlet.

5,191,762
SYSTEM FOR DETECTING DETERIORATION OF A THREE-WAY CATALYST OF AN INTERNAL COMBUSTION ENGINE

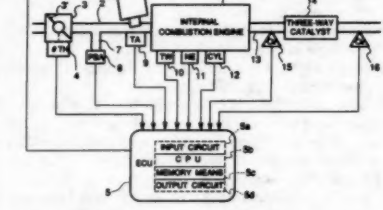
Shigetaka Kuroda, and Hiroshi Ono, both of Wako, Japan, assignors to Honda Giken Kogyo K.K., Tokyo, Japan

Filed May 15, 1991, Ser. No. 700,542

Claims priority, application Japan, May 30, 1990, 2-056617[U]

Int. Cl.[5] F01N *3/28*

U.S. Cl. 60—276 **6 Claims**



1. A system for detecting deterioration of a three-way catalyst of an internal combustion engine having an intake passage, a throttle valve arranged in said intake passage, an exhaust passage, said three-way catalyst being arranged in said exhaust passage, and an air-fuel ratio sensor arranged in said exhaust passage at a location down-stream of said three-way catalyst for detecting the air-fuel ratio of an air-fuel mixture supplied to said engine, said system comprising:

fuel supply control means for (i) starting to cut off the fuel supply to said engine when said engine is decelerated with said throttle valve substantially fully closed, and (ii) resuming the fuel supply to said engine when the rotational speed of said engine has become lower than a predetermined value;

time-measuring means for measuring the time which the output from said air-fuel ratio sensor has required to reach a predetermined reference value after the resumption of the fuel supply to said engine by said fuel supply control means; and

deterioration-determining means for determining that said three-way catalyst is deteriorated when said measured time is shorter than a predetermined time period.

5,191,763

DEVICE FOR CONTROLLING HEATING OF CATALYZER FOR PURIFYING EXHAUST GAS

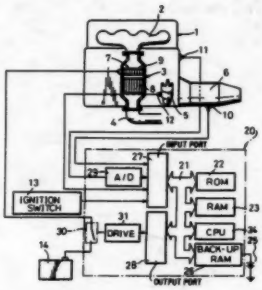
Kiyoshi Yuuki, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Jun. 11, 1992, Ser. No. 897,034

Claims priority, application Japan, Aug. 2, 1991, 3-194327

Int. Cl.[5] F01N *3/20*

U.S. Cl. 60—284 **18 Claims**



1. A device for controlling the heating of a catalyzer arranged in an exhaust passage of an engine, said device comprising:

heating means for heating the catalyzer;

calculating means for calculating a cumulative period of use of the catalyzer; and

control means for controlling said heating means in response to a result of the calculation by said calculating means to temporarily heat the catalyzer when the engine is started and to increase an amount of heat applied to the catalyzer by said heating means as said cumulative period of use of the catalyzer becomes longer.

5,191,764

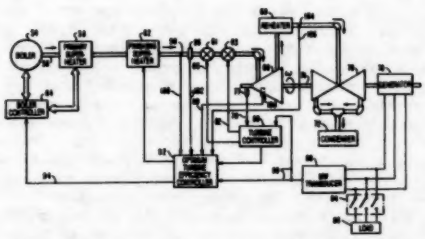
GOVERNOR VALVE POSITIONING TO OVERCOME PARTIAL-ARC ADMISSION LIMITS

George J. Silvestri, Jr., Winter Park, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 9, 1992, Ser. No. 896,039

Int. Cl.[5] F01K *13/02*

U.S. Cl. 60—660 **7 Claims**



1. A method for improving heat rate of a partial-arc steam turbine, the turbine including a plurality of control valves each arranged for admitting steam to a predetermined arc of admission at a control stage of the turbine, the method comprising the steps of:

selecting a maximum allowable control stage pressure drop;

determining an arc of admission range including the maximum allowable control stage pressure drop at normal turbine operating pressure, the range being defined by upper and lower valve points operatively associated with one of the control valves;

sequentially closing each of the control valves for reducing turbine output power while holding steam pressure substantially constant until the control stage pressure drop reaches a value predeterminately less than the maximum allowable control stage pressure drop and the one of the control valves is only partially closed; and

holding each control valve in its respective present position while reducing steam pressure to control turbine output power.

5,191,765

MASTER CYLINDER FOR A HYDRAULIC BRAKE SYSTEM AND STEERING BRAKE SYSTEM

Ute Ruehl, Rosbach, Fed. Rep. of Germany, assignor to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

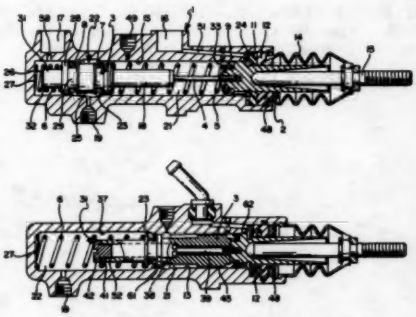
PCT No. PCT/EP90/00202, § 371 Date Dec. 17, 1990, § 102(e) Date Dec. 17, 1990, PCT Pub. No. WO90/12714, PCT Pub. Date Nov. 1, 1990

PCT Filed Feb. 8, 1990, Ser. No. 634,172

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1989, 3913353; Nov. 6, 1989, 3936832

Int. Cl.[5] B60T *11/21;* **B62D** *11/08*

U.S. Cl. 60—581 **14 Claims**



1. A hydraulic brake and brake steering system for an automotive vehicle having a wheel brake on either side of said vehicle, said system comprising:

a pair of master cylinders each including a master cylinder housing having a bore formed therein and a primary piston slidably mounted therein and defining in part at one end a pressure chamber,

said primary piston movable between a first retracted position and a second advanced position in said bore;

means for supplying brake fluid to said system including a pressureless storage reservoir containing fluid and supply passage means allowing fluid flow into each of said pressure chambers with said primary pistons in said retracted position;

a pair of brake pedals, each drivingly engaged with a respective primary piston to enable pressurization of a respective pressure chamber by causing advancing movement thereof;

a pair of operating pistons, each mounted in a respective master cylinder housing bore adjacent an associated primary piston and defining in part a respective compensat-

ing chamber separate from an associated pressure chamber therein, said operating pistons movable in said bore between a first retracted position and a second advanced position;

return spring means associated with a respective primary piston and associated operating piston urging each of said primary pistons and associated operating piston to said retracted, first position thereof;

sealing means carried by each operating piston acting to seal an associated compensating chamber from its associated pressure chamber in said first retracted position of the respective operating pistons and open communication therebetween in said second advanced position in said bore of said operating pistons;

compensating fluid passage means extending between said respective compensation chambers to establish fluid communication therebetween;

fluid passage means extending between each master cylinder pressure chamber and a respective one of said wheel brakes;

a driving interconnection between each primary piston and an associated operating piston causing said associated operating piston to advance from said first position to said second position as said primary piston is advanced from said retracted position to said advanced position by operation of an associated brake pedal, whereby upon operation of both of said brake pedals, both primary pistons are advanced to advance both of said operating pistons and establish communication between said pressure chambers via said compensating chambers and said compensating fluid passage means but when only one of said brake pedals is operated, the other compensating chamber remains sealed from its associated pressure chamber.

5,191,766

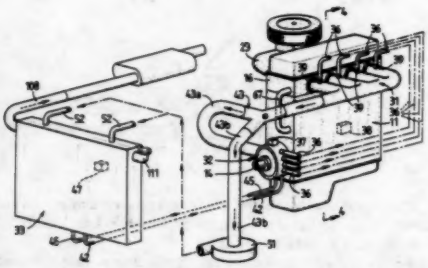
HYBRID INTERNAL COMBUSTION/STEAM ENGINE

Frank L. Vines, 607 Columbiana Rd., Birmingham, Ala. 35209

Filed Jun. 10, 1991, Ser. No. 712,569

Int. Cl.[5] F02G *3/02, 5/02*; B60K *3/04, 6/12*

U.S. Cl. 60—619 **28 Claims**



1. A hybrid internal combustion/steam engine having a plurality of cylinders with pistons therein connected to a crankshaft, comprising in combination therewith:

(a) means for introducing a combustible fuel/air mixture into each cylinder of said plurality of cylinders for combustion to provide a power stroke for the piston;

(b) a plurality of exhaust ports each connected to and in communication with a cylinder of said plurality of cylinders, such that exhaust combustion gases are discharged through selected ones of said plurality of exhaust ports during an exhaust stroke of said piston;

(c) a steam generator connected to and in communication with each exhaust port having a water injection port therein proximal the exhaust port of each cylinder;

(d) means for selectively injecting a predetermined volume of water proximal the exhaust port of selected cylinders concurrently with the end of the exhaust stroke and the end of the compression stroke of pistons associated with said selected cylinders such that the volume of water contacts the exhausted combustion gases and is substantially vaporized into a pressurized volume of steam within said steam generator;

(e) means for allowing exhaust combustion gases into said steam generator from said exhaust port of said cylinder and means to prevent steam generated in said steam generator from reentering said cylinder; and

(f) a pressurized steam powered take off means connected to and in communication with said steam generator for converting said exhaust combustion gases into a usable power source.

5,191,767

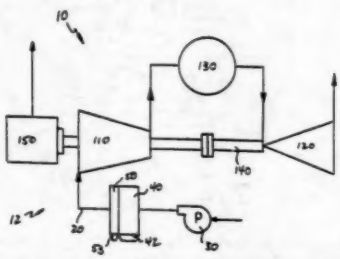
GAS TURBINE AIR HANDLING SYSTEM

David M. Kane, Darien, and William E. Fry, Stamford, both of Conn., assignors to Mistop, Inc., East Norwalk, Conn.

Continuation-in-part of Ser. No. 610,431, Nov. 7, 1990, Pat. No. 5,074,117. This application Dec. 17, 1991, Ser. No. 808,906

Int. Cl.[5] F02C *1/02*

U.S. Cl. 60—728 **17 Claims**



1. A gas turbine comprising a compressor, a turbine, a combustion zone, and a generator, wherein said gas turbine further comprises a passage for the supply of intake air to said compressor; means for generating a flow of air through said air intake passage; cooling means disposed within said air intake passage so as to be contacted by the flow of intake air; and elimination means disposed within said air intake passage so as to be contacted by the flow of air after said cooling means is contacted by the flow of air, said elimination means comprising a knitted mesh pad in order to reduce the moisture level of the intake air.

5,191,768

AUTOMOBILE AIR CONDITIONER COMPRESSOR DISCHARGE CAPACITY CONTROLLER

Kazuo Fujii, Konan, Japan, assignor to Zexel Corporation, Tokyo, Japan

Filed Jan. 23, 1992, Ser. No. 824,524

Claims priority, application Japan, Apr. 26, 1991, 3-125267

Int. Cl.[5] F25B *41/00*

U.S. Cl. 62—209 **5 Claims**

1. An automobile air conditioner compressor discharge capacity controller, which has an evaporator installed inside the air-conditioning duct of an automobile air conditioner and a variable discharge capacity compressor at least executing a cooling cycle together with the aforementioned evaporator, an expansion valve, and a condenser, and which controls, by means of its variable discharge capacity structure, the discharge capacity of the aforementioned variable discharge capacity compressor, are equipped with the following means:

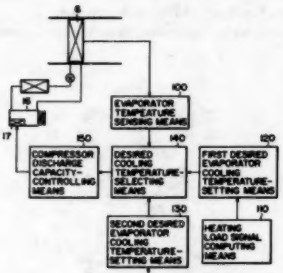
(a) an evaporator temperature-sensing means for sensing the temperature of the aforementioned evaporator;

(b) a heat load signal-computing the heat load signals to control the air conditioner for environmental conditions inside/outside the passenger compartment, including the

temperature in the passenger compartment, the outdoor temperature, and set temperature in the passenger compartment;

(c) a first evaporator cooling temperature-setting means for setting a first desired temperature for the aforementioned evaporator based on the aforementioned heat load signals and on the pattern of the desired cooling temperature characterized by its being high when the cooling load is low;

(d) a second evaporator cooling temperature-setting means for setting a second desired cooling-temperature for the aforementioned evaporator based on the pattern of the desired cooling temperature characterized by its being high when the outdoor temperature is moderate, and by being low when the outdoor temperature is low or high;


EVAPORATOR TEMPERATURE SENSING MEANS
COMPRESSOR DISCHARGE CAPACITY-CONTROLLING MEANS
DESIRED COOLING TEMPERATURE-SELECTING MEANS
FIRST DESIRED EVAPORATOR COOLING TEMPERATURE-SETTING MEANS
SECOND DESIRED EVAPORATOR COOLING TEMPERATURE-SETTING MEANS
HEATING LOAD SIGNAL COMPUTING MEANS
OUTDOOR TEMPERATURE

(e) a desired cooling temperature-setting means that compares the first desired cooling-temperature set by aforementioned first evaporator cooling temperature-setting means, with the second desired cooling temperature set by the aforementioned second evaporator cooling temperature-setting means, when the aforementioned evaporator cooling temperature sensed by the aforementioned evaporator temperature-sensing means is above a specific value, and selects the lower desired cooling temperature;

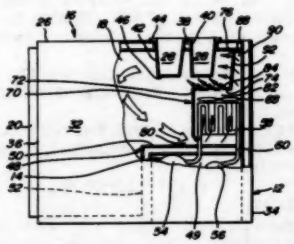
(f) a compressor discharge capacity controlling means for controlling the variable capacity structure of the aforementioned variable capacity compressor based on the desired cooling temperature selected by the aforementioned desired cooling-temperature selecting means.

5,191,769

FOOD PREPARATION TABLE HAVING A REFRIGERATED INGREDIENT ZONE

Daniel J. Mangini, Turnersville, N.J., and John P. Morris, Broomall, Pa., assignors to Glenco-Star, Inc., Philadelphia, Pa.

Filed Sep. 6, 1991, Ser. No. 755,860
Int. Cl.[5] F25D *17/06*
U.S. Cl. 62—258 **30 Claims**



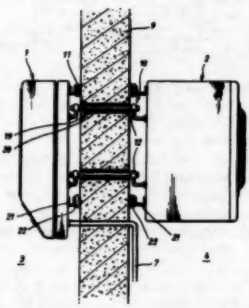
5. In a refrigerated appliance for cooling foodstuffs, an enclosure having an insulated chamber for storing foodstuffs, and refrigerator means including a fan for supplying and moving cooling air to maintain a refrigerated environment in said chamber for cooling the foodstuffs stored therein, said enclosure having a generally horizontally disposed top wall provided with one or more spaced openings communicating with said chamber, and said openings being adapted for receiving and spacing heat transferring bottom and sidewall surfaces of foodstuff containers extending vertically downwardly from said top wall and inwardly of the chamber, the improvement comprising baffle means disposed in close proximity to said top wall for substantially simultaneously directing said cooling air from said refrigerator into said chamber and against the heat transferring bottom and sidewall surfaces of said containers, said baffle means including a horizontally disposed first baffle plate having a plurality of first outlet openings confronting the heat transferring surfaces of said containers and configured to direct said cooling air generally vertically, and a vertically disposed second baffle plate connected to said first baffle plate, said second baffle plate having a plurality of second outlet openings confronting the heat transferring surfaces of said containers and configured to direct said cooling air generally horizontally and in a direction transverse to the air from said first outlet openings, said cooling air being substantially simultaneously directed by said fan directly against each said baffle plate and directly into the chamber against said heat transferring surfaces.

5,191,770

MOUNTING ASSEMBLY OF A SEPARATE TYPE AIR-CONDITIONER

Sung Ki Kim, Suweon-City, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suweon-City, Rep. of Korea

Filed Dec. 17, 1991, Ser. No. 808,608
Claims priority, application Rep. of Korea, Dec. 17, 1990, 90-20054
Int. Cl.[5] F25D *23/12*
U.S. Cl. 62—263 **10 Claims**



1. In an air conditioner system including:

an indoor unit and a separate outdoor unit disposed on opposite sides of a building wall and situated above a floor and the ground, respectively; and

at least three conduit means interconnecting said indoor and outdoor units for the transfer of media therebetween and for supporting said indoor and outdoor units above said floor and said ground, respectively, each of said conduit means comprising:

a hollow first pipe extending through the building wall such that each first pipe has an indoor end and an outdoor end,

a pair of hollow second pipes disposed at respective ends of said first pipe, each second pipe including

a coupling portion connected to said end first pipe, and

a conducting portion extending from said coupling portion, and

connecting means for removably securing said second pipes to said first pipe such that a passage is formed which communicates the interior of said first pipe with the interior of said second pipes;

said indoor unit being connected to, and supported by, each of said second pipes located at said indoor end of its respective first pipe;

said outdoor unit being connected to, and supported by, each of said second pipes located at said outdoor end of its respective first pipe;

two of said conduit means conducting a medium in the form of heat transfer fluid between said indoor and outdoor units such that the fluid contacts interior surface of said first pipe and said second pipe of said two conduit means; and

a third of said conduit means containing an electrical wire for conducting medium in the form of electricity between said indoor and outdoor units.

5,191,771

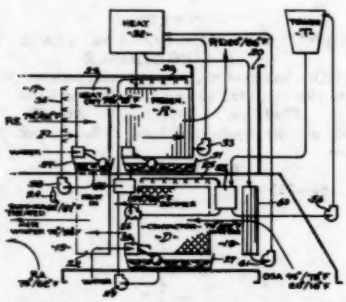
POLYMER DESICCANT AND SYSTEM FOR DEHUMIDIFIED AIR CONDITIONING

Milton Meckler, 930 20th St. No. 2, Santa Monica, Calif. 90403

Filed Jul. 5, 1991, Ser. No. 726,040

Int. Cl.[5] F25D *23/00*

U.S. Cl. 62—271 **19 Claims**



1. An air conditioning system having an outside air inlet duct and a conditioned air supply duct into a conditioned space, and an air dehumidifier means for processing a water vapor adsorptive liquid desiccant including;

a contacter section in the inlet duct for interface contact of outside air with said liquid desiccant applied thereto by a distribution means to adsorb water vapor therefrom and thereby weakening the liquid desiccant,

a regenerater section to remove said adsorbed water vapor from said weakened desiccant from the contacter section and returned thereto by said distribution means,

and a heat source means applying heat to the regenerater section for said removal of adsorbed water vapor therefrom,

the liquid desiccant being a hygroscopic polymer-salt sulfonated and in solution.

5,191,772

AUGER-TYPE ICE-MAKING APPARATUS

Franklin D. Engel, Englewood, Colo., assignor to Pacific Rockies, Inc., Denver, Colo.

Filed Feb. 13, 1992, Ser. No. 834,803

Int. Cl.[5] F25C *1/14*

U.S. Cl. 62—320 **20 Claims**

1. Apparatus for producing ice particles comprising:

a housing mounted at a relatively fixed location;

a hollow member having a longitudinal axis and a generally cylindrical inner surface mounted on said housing so that it extends generally in a vertical direction;

an auger having a longitudinal axis coinciding with said longitudinal axis of said hollow member and mounted for rotational movement relative to said hollow member;

said auger having a generally cylindrical central body portion for providing an ice forming chamber between said generally cylindrical inner surface and said central body portion;

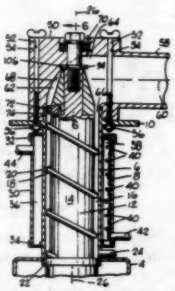
water supply means for maintaining a level of water in said ice-forming chamber;

ice forming means for forming a layer of ice on said generally cylindrical inner surface;

said auger having a helically extending flight having an ice shearing edge for removing said layer of ice from said generally cylindrical inner surface and for moving said removed ice in said vertical direction;

support means extending radially outwardly from said hollow member and spaced a predetermined distance below the upper end of said hollow member;

discharge means mounted on said support means and having



a modified elbow portion and a discharge tube extending outwardly therefrom;

pressure forming means mounted on said central body portion for rotation therewith and located in said modified elbow portion for applying pressure on said ice being moved upwardly by said ice shearing edge and said helically-extending flight;

said pressure forming means having at least a generally conical outer surface extending upwardly into said modified elbow portion;

said discharge tube having a longitudinal axis perpendicular to said longitudinal axis of said auger; and

said modified elbow having an inner surface, a portion of which comprises a partial generally oval surface located opposite to at least a portion of said generally conical outer surface and having a longitudinal axis extending parallel to said longitudinal axis of said auger but spaced therefrom a predetermined distance along said longitudinal axis of said discharge tube.

5,191,773

RECIRCULATING CHILLING APPARATUS WITH A SUBMERGED ELECTRIC MOTOR AND IMPELLER

Allan J. Cassell, 12 Leigh Street, Werribee, Victoria 3030, Australia

PCT No. PCT/AU90/00362, § 371 Date May 22, 1991, § 102(e) Date May 22, 1991, PCT Pub. No. WO91/02933, PCT Pub. Date Mar. 7, 1991

PCT Filed Aug. 22, 1990, Ser. No. 700,131

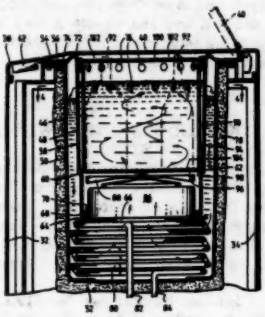
Claims priority, application Australia, Aug. 22, 1989, PJ5878; Dec. 14, 1989, PJ7872

Int. Cl.[5] F25D *17/02*

U.S. Cl. 62—373 **12 Claims**

1. Apparatus for the chilling of articles, said apparatus including a refrigeration system; a container having a main bowl in which a cooling fluid is located; an inner bowl within said main bowl, said inner bowl having a side wall with at least one

opening therethrough adjacent the top of said side wall to allow said cooling fluid to pass therethrough into a gap between said side wall and said main bowl, said inner bowl having at least one hole therethrough at its lower end, said hole being operatively connected to said gap; circulation means in



one of said bowls for assisting circulation of said cooling fluid; and cooling means in said one bowl for cooling said cooling fluid, the circulation means comprising an electric motor and impeller both submerged in the cooling fluid, and the impeller causing circulation of fluid by lifting and agitating the fluid.

5,191,774

REFRIGERATING COMPARTMENT TEMPERATURE CONTROL DEVICE

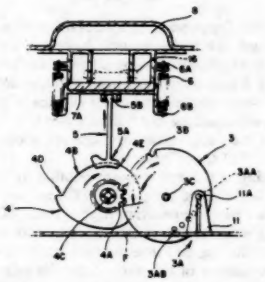
Suk Heang Park, Suweon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suweon, Rep. of Korea

Filed Sep. 26, 1991, Ser. No. 765,686

Claims priority, application Rep. of Korea, Sep. 26, 1990, 90-15323

Int. Cl.[5] F25D *17/04*

U.S. Cl. 62—408 **9 Claims**



1. A refrigerator comprising:

frame means defining a refrigerating chamber;

means for supplying cold air to said refrigerating chamber through a cold air channel;

a damper including a channel closing portion and being mounted for movement in a first direction such that said channel closing portion moves away from said channel and in a second direction such that said channel closing portion moves toward said channel, said damper being pivotably mounted for rotation about a horizontal axis;

biasing means for biasing said damper in one of said first and second directions; and

actuating means operably connected to said damper for moving said damper in the other of said first and second directions against the bias of said biasing means, said actuating means comprising:

a rotary means including a rotary knob and a cam surface rotatable with said rotary knob and operably connected to said damper for moving said damper in said other of said first and second directions, said rotary knob being rotatable about a vertical axis; and

a pin-and-recess coupling for yieldably retaining said rotary means in various positions of angular adjustment.

5,191,775

REFRIGERANT RECEIVER

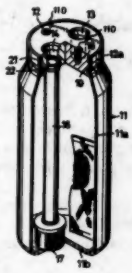
Kanichi Shiina; Katsuhisa Suzuki, and Yuji Yamamoto, all of Tochigi, Japan, assignors to Showa Aluminum Corporation, Osaka, Japan

Continuation of Ser. No. 663,084, Mar. 1, 1991, abandoned, which is a continuation-in-part of Ser. No. 428,672, Oct. 30, 1989, abandoned. This application Mar. 30, 1992, Ser. No. 860,565

Claims priority, application Japan, Oct. 31, 1988, 63-142822

Int. Cl.[5] F25B *43/00*

U.S. Cl. 62—503 **21 Claims**



1. A refrigerant receiver comprising:

a tubular body having a trunk wall including

an open upper end portion having a first diameter,

a lower portion having a second diameter which is larger than said first diameter, and

an intermediate tapered portion connecting said upper end portion and said lower portion; and

a closure fitted in the open end portion, the open end portion being constricted and crimped, by electromagnetic forming, and therein secured to the closure, said closure having a flat upper surface which is one of even with and slightly higher than an upper surface of a lip of said tubular body, said closure having a refrigerant inlet channel extending therethrough, said refrigerant inlet channel having an enlarged inlet diameter portion formed in said flat upper surface of said closure at an upper end portion of said refrigerant inlet channel, and said closure having a refrigerant outlet channel extending therethrough, said refrigerant outlet channel having an enlarged outlet diameter portion formed in said flat upper surface of said closure at an upper end portion of said refrigerant outlet channel, and said closure having tapped holes formed in said flat upper surface for connection with auxiliary devices.

5,191,776

HOUSEHOLD REFRIGERATOR WITH IMPROVED CIRCUIT

Martin C. Severance, and Stephen Searl, both of Louisville, Ky., assignors to General Electric Company, N.Y.

Filed Nov. 4, 1991, Ser. No. 787,233

Int. Cl.[5] F25B *5/02, 39/02*

U.S. Cl. 62—513 **17 Claims**

1. A refrigerator comprising:

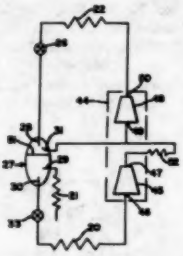
compressor means;

condenser means connected to receive refrigerant discharged from said compressor means;

a refrigerant phase separator connected to receive refriger-

ant discharged from said condenser means and including a receptacle for accumulating liquid phase refrigerant in its lower portion and vapor phase refrigerant in its upper portion;

a fresh food compartment, a fresh food evaporator for refrigerating said fresh food compartment, said fresh food evaporator being connected to said phase separator to receive liquid phase refrigerant from said phase separator and to discharge vapor phase refrigerant back to said phase separator;



a freezer compartment, a freezer evaporator for refrigerating said freezer compartment and connected to receive liquid phase refrigerant from said phase separator and to discharge vapor phase refrigerant to said compressor means; and

means connecting said upper portion of said phase separator with said compressor means for conducting vapor phase refrigerant from said phase separator to said compressor means.

5,191,777

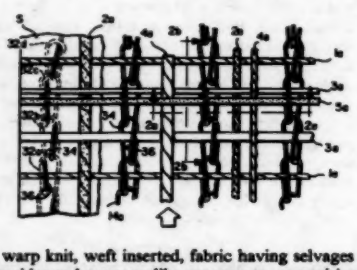
WEFT INSERTED, WARP KNIT, WOVEN-LOOK FABRIC AND APPARATUS AND METHODS OF MAKING THE FABRIC

Julius R. Schnegg, Burlington, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Continuation-in-part of Ser. No. 329,368, Mar. 27, 1989, abandoned. This application Sep. 14, 1990, Ser. No. 582,340

Int. Cl.[5] D04B *21/14*

U.S. Cl. 66—195 **28 Claims**



1. A warp knit, weft inserted, fabric having selvages along opposite sides and a woven-like appearance, comprising:

plural stitch wales having a plurality of substantially parallel courses and a stitch in each wale at each course having a technical face side and a technical back side;

a first set of weft yarns each of which is held in the fabric by the technical back sides of predetermined ones of said stitches;

a second set of weft yarns each of which is held in the fabric by the technical face sides of predetermined ones of said stitches and spaced along said fabric from said firs set of weft yarns; and

each of said first set of weft yarns and said second set of weft yarns extending to and between the selvages along opposite sides of the fabric; and

each weft yarn being longitudinally spaced along the fabric from each other weft yarn in the fabric;

plural warp yarns spaced form one another disposed between said firs and second sets of weft yarns and extending in a warp direction between predetermined stitch wales;

whereby said first and second sets of weft yarns and said warp yarns are interlaced one with another such that at least one side of the fabric has said woven-like appearance.

5,191,778

PROCESS FOR PRODUCING THIN-WEBBED H-BEAM STEEL

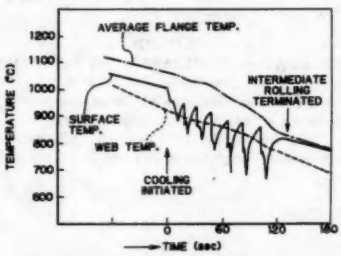
Akira Inagaki; Masao Kurokawa; Hiroyuki Hasegawa, all of Sakai; Toshihiro Ishibashi, Kitakyushu; Hiroaki Hadano, Kitakyushu; Takeshi Hioki, Kitakyushu; Yoshimi Toriyama, Kitakyushu; Kazuo Fujita, Sakai; Yasushi Takeshima, Sakai; Teruyuki Wakatsuki, Sakai, and Yasushi Horiuchi, Sakai, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jun. 20, 1991, Ser. No. 719,122

Claims priority, application Japan, Jun. 21, 1990, 2-161403; Jun. 21, 1990, 2-161405; Nov. 6, 1990, 2-298885

Int. Cl.[5] B21B *37/10*; B21D *37/16*; C21D *1/00, 9/00*

U.S. Cl. 72—13 **4 Claims**



1. A process for producing a steel thinwebbed H-beam having a selected size and a length, having a web thinner than flanges with said flanges having an outer surface, and with said steel having a microstructure, which comprises the steps of:

forcibly water cooling the outer surface of the flanges during an intermediate hot rolling prior to a final hot rolling, so that the flange outer surfaces are cooled to a temperature of 700° C. or lower;

interrupting said forcible water cooling during the intermediate hot rolling so that the flange outer surfaces are returned to a temperature higher than 700° C.;

repeating said forcible water cooling and said interruption thereof during said intermediate hot rolling to refine the microstructure of the steel of the flange outer surfaces to a predetermined depth from the outer surface;

final-hot rolling the intermediate-hot rolled H-beam steel; and

forcibly water cooling the flanges of the final-hot rolled H-beam steel with a selected density of cooling water quantity immediately after completing final hot rolling for a selected cooling time, in a manner such that either the cooling time is not longer than an upper time limit or for a time such that the flange and the web temperature difference upon completion of the forcible water cooling after final hot-rolling is not less than a lower temperature limit, within which upper time limit and lower temperature limit the web does not wave during the forcible water cooling after final hot-rolling, and such that either the cooling time is not less than a lower time limit or for a time such that the flange and the web temperature difference upon completion of the forcible water cooling after final hot-rolling is not more than an upper temperature limit, within

which lower time limit and upper temperature limit a thermal stress, generated in the web during air cooling to room temperature, does not exceed a buckling strength of the web, the upper time and temperature limits and the lower time and temperature limits being predetermined with respect to the selected size of the H-beam and the selected density of coolant water quantity.

5,191,779

METHOD OF PRODUCING A METALLIC CAN USING A SATURATED BRANCHED CHAIN CONTAINING HYDROCARBON LUBRICANT

Katsuhiro Imazu; Kazuhiro Sato; Takurou Ito, all of Yokohama; Shunji Kaneko, Ebina, and Toshio Sue, Tokyo, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

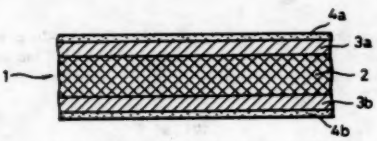
PCT No. PCT/JP90/01595, § 371 Date Aug. 5, 1991, § 102(e) Date Aug. 5, 1991, PCT Pub. No. WO91/08066, PCT Pub. Date Jun. 13, 1991

PCT Filed Dec. 6, 1990, Ser. No. 743,350

Claims priority, application Japan, Dec. 6, 1989, 1-315205; Nov. 1, 1990, 2-293680

Int. Cl.[5] B21B *45/00*

U.S. Cl. 72—46 **8 Claims**



1. A method of producing a metallic container comprising:

uniformly coating a thermoplastic resin on a surface of a metallic material with a saturated branched chain containing hydrocarbon lubricant, wherein the branched chains are present in an amount of at least one branch per 2 to 10 carbon atoms of the main chain, and the number of branched chains having one carbon atom is at least 70% of the number of entire branched chains present;

subjecting the coated metallic material to at least one drawing; and

heating the can obtained by drawing to volatilize a major portion of the lubricant adhering to the can.

5,191,780

ROLLER-TYPE STRAIGHTENING APPARATUS FOR H-BEAMS

Kazuo Ohmori; Tsuneo Seto; Hitoshi Itakura; Mikio Kohno, all of Okayama; Masaru Nagao, Osaka; Tatsuya Morishita, Osaka, and Masayuki Tanigawa, Osaka, all of Japan, assignors to Kawasaki Steel Corporation, Japan

Filed Dec. 18, 1991, Ser. No. 809,926

Claims priority, application Japan, Mar. 19, 1991, 3-54283; Apr. 22, 1991, 3-90338; Nov. 1, 1991, 3-286936

Int. Cl.[5] B21D *1/14*

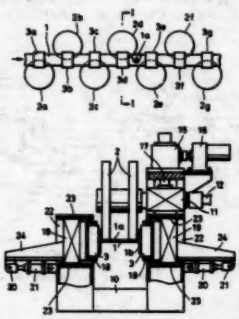
U.S. Cl. 72—164 **7 Claims**

1. A straightening apparatus for an elongated H-beam movable along a longitudinally extending pass line, said H-beam having a horizontally arranged web and a pair of opposed vertically arranged flanges extending along a longitudinal axis of said H-beam comprising:

a plurality of spaced-apart horizontal web-engaging rolls arranged in a substantially straight line for pressing the web of the H-beam and alternately vertically disposed against opposite faces of said web above and below the web, said web-engaging rolls being arranged so that said web is unsupported on a face directly opposite from each web engaging roll, said horizontal web engaging rolls having axes extending substantially horizontally,

a plurality of pairs of spaced-apart flange-engaging vertical rolls arranged in a substantially straight line in position for pressing the surfaces of said flanges, said vertical rolls having axes extending substantially vertically,

said pairs of vertical flange-engaging rolls being disposed to correspond substantially in position along the length of



said H-beam to the positions of each of said horizontal web-engaging rolls along the H-beam so that the axes of each pair of vertical rolls substantially cross the axis of the corresponding horizontal roll.

5,191,781

RATIOMETRIC SIGNAL CORRECTION SYSTEM FOR A VEHICLE ELECTRONIC CONTROL SYSTEM

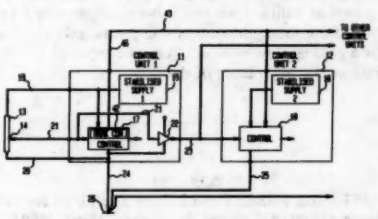
Helmut Denz, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/EP89/01138, § 371 Date May 23, 1991, § 102(e) Date May 23, 1991, PCT Pub. No. WO91/05154, PCT Pub. Date Apr. 18, 1991

PCT Filed Sep. 28, 1989, Ser. No. 688,960

Int. Cl.[5] G01M *19/00*

U.S. Cl. 73—1 E **15 Claims**



1. A ratiometric signal correction system for a vehicle electronic control system, comprising:

a sensor for detecting a predetermined vehicle parameter that changes in response to changing operating conditions of the vehicle and generating an output signal representative of the changing vehicle parameter;

a first control unit that receives, as an input signal, the output signal from the sensor that is representative of the changing vehicle parameter, the first control unit providing a supply voltage input to the sensor and generating reference signals corresponding to predetermined states of the sensor; and

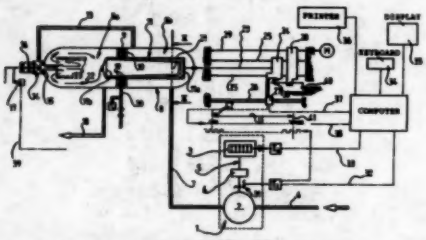
at least one second control unit that receives, as an input signal, the output signal from the sensor that is representative of the changing vehicle parameter, and the reference signals from the first control unit for correcting inaccuracies in the detected changes in the vehicle parameter at the second control unit.

5,191,782

DEVICE FOR GAUGING A VOLUMETRIC METER

Georges F. D. Maingot, Villepreux, France, assignor to Mesure Controle et Automatisme Mestrole, France

Filed Oct. 17, 1990, Ser. No. 599,303
Claims priority, application France, Oct. 17, 1989, 89 13565
Int. Cl.[5] G01F 25/00
U.S. Cl. 73—3 6 Claims



1. A device for gauging a volumetric liquid meter comprising a measuring member and a volume indicator, said device comprising a first pulse generator driven by the measuring member for generating a first pulse corresponding to the true volume passing into the measuring member, a second pulse generator driven by the volume indicator for generating a second pulse corresponding to the volume read by the indicator, means for forming a ratio of the number of the first and second pulses for comparing the value read by the volume indicator and the true volume passing into the measuring member, an enclosure containing a piston hydraulically connectable to said measuring member of said meter, said piston comprising a plunger piston having a cross-section smaller than the cross-section of said enclosure, said piston being slidably mounted in sealing relationship through an opening in at least one wall transversely mounted within said enclosure to define at least two fluid-tight capacities within said enclosure, wherein both capacities are connectable to a circuit for conveyance of liquid passing into said measuring member of said meter and both capacities communicate with each other through at least one duct provided with at least one valve arranged along a center line axis of the sliding motion of said piston, said valve allowing for a gradual flow of liquid from one capacity to the other capacity or discontinuance of the flow.

5,191,783

PORTABLE BASKETBALL RIM TESTING DEVICE

W. Bruce Abbott, 610 Clover St., Cheney, Wash. 99004

Filed Apr. 25, 1991, Ser. No. 691,386
Int. Cl.[5] G01L 1/04; G01N 3/08
U.S. Cl. 73—12.06 35 Claims

13. A portable basketball rim testing device for determining the rebound characteristics of a basketball rim, comprising:

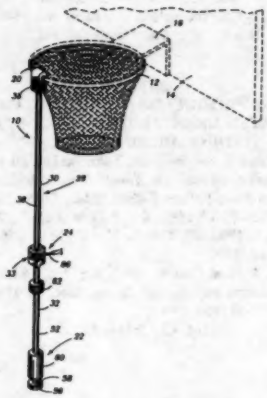
a weight guide;

attachment means for attaching the weight guide to the basketball rim;

a drop weight received by the weight guide;

an impact face to terminate downward motion of the drop weight and to generate an impact force, the impact face being operably connected to the weight guide to transmit the impact force to the basketball rim, wherein the impact force has a magnitude sufficient to deflect the basketball rim to simulate the impact of a falling basketball striking the basketball rim;

a transducer operably connected to the weight guide to generate a signal that contains information concerning the magnitude of the deflection of the basketball rim in response to the application of the impact force; and



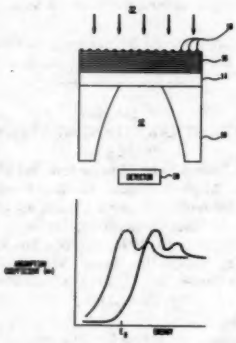
signal processing means responsive to the transducer signal for determining the rebound characteristics of the basketball rim.

5,191,784

OPTO-ELECTRONIC GAS SENSOR

Kevin W. Jelley, Allentown, N.J., and G. J. Maclay, Maywood, Ill., assignors to Siemens Corporate Research, Inc., Princeton, N.J.

Filed Dec. 28, 1989, Ser. No. 458,032
Int. Cl.[5] H01L 29/205; G01J 3/10
U.S. Cl. 73—31.06 6 Claims



1. A semiconductor device adapted for operation as a gas sensor, comprising:

a body of semiconductor material including a substrate region and a multiple quantum well (MQW) structure over said substrate region, said MQW structure having first and second different materials arranged alternately in a plurality of parallel planar layers in a vertical direction, said planar layers exhibiting an absorption edge for electromagnetic radiation at a first wavelength thereof and having a respective predetermined relatively thin thickness dimension of a value wherein an electric field acting perpendicularly to said planar layers causes a shifting of said absorption edge from said first wavelength of said

electromagnetic radiation to a second wavelength of said electromagnetic radiation;

a layer of a transition metal formed over a topmost layer of said MQW structure, said layer of a transition metal having a relatively thin thickness dimension being substantially transparent to the electromagnetic radiation and substantially permeable to a gas to be detected; and

a light detector, located below said substrate region, for detecting the sifting in wavelength of said electromagnetic radiation transmitted in the vertical direction through said layer of transition metal, said MQW structure, and said substrate region,

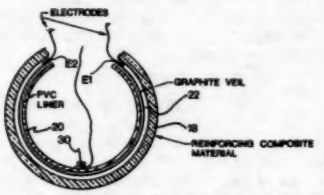
wherein said layer of transition metal allows gas atoms to permeate into the topmost layer of said MQW structure so as to form a dipole layer resulting in an electric field acting perpendicularly to said planar layers of said MQW structure, thereby causing a shifting in wavelength of said electromagnetic radiation which is detected by said light detector to indicate the presence of the gas.

5,191,785

METHOD AND APPARATUS FOR IDENTIFYING AND LOCATING A LEAK IN THE INNER LINER OF A VESSEL HAVING A LAMINATED WALL STRUCTURE

John A. Kidd, Rosemere; Swong V. Hoa, Brossard, and Ramesh Janardhanam, Montreal, all of Canada, assignors to CPF Chemical Equipment Ltd., Canada

Filed Apr. 16, 1991, Ser. No. 685,653
Int. Cl.[5] G01M *3/16*; B65D *90/04*
U.S. Cl. 73—49.2 **11 Claims**



1. A vessel for containing an electro-conductive fluid, said vessel having a laminated wall structure, including:

an outer structural shell;

an inner corrosion-resistant lining made of electrically non-conductive material, constituting a barrier between said structural shell and electro-conductive fluid in the vessel;

an electrically resistive medium between said structural shell and said corrosion-resistant lining;

an array of electrodes mounted in a spaced apart relationship at fixed and known locations to said resistive medium;

a main electrode in said vessel extending into the electro-conductive fluid which forms an electric path between said main electrode and said resistive medium in occurence of a fault in said corrosion-resistant lining, such that electro-conductive fluid is allowed to contact said resistive medium;

means for impressing a voltage difference across electrodes of said array for causing electric current to flow through said resistive medium; and

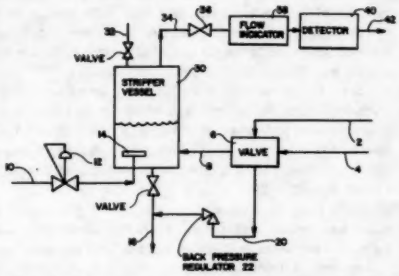
means for obtaining voltage drop measurements across said resistive medium between electrodes of said array and the contact point of electro-conductive fluid on said resistive medium, to determine the location of said fault on said lining which corresponds to said contact point, each of said voltage drop measurements being between a respective electrode of said array and said main electrode.

5,191,786

METHOD FOR DETECTING THE PRESENCE AND CONCENTRATION OF RELATIVELY LOW MOLECULAR WEIGHT COMPONENTS IN A LIQUID

Ernest H. Baughman, Naperville; John R. Winston, Bolingbrook, and Kenneth W. Andresen, Glen Ellyn, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Jun. 28, 1991, Ser. No. 722,958
Int. Cl.[5] G01N *7/16*
U.S. Cl. 73—64.45 **11 Claims**



1. A method for measuring the concentration of at least one target component present in a liquid comprising the steps of:

(a) obtaining a sample of said liquid having a predetermined volume;

(b) commingling said sample with a diluent to form a sample-diluent mixture;

(c) passing said mixture to a stripping zone;

(d) stripping said target component from said mixture with a stripping gas at a predetermined stripping gas flow rate and predetermined stripping conditions;

(e) passing said stripped target component to a detection zone at a predetermined rate;

(f) generating a signal in said detection zone responsive to the quantity of said target component; and

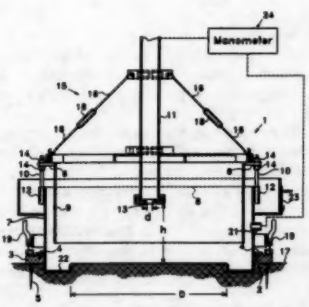
(g) utilizing a chemometric model to correlate said signal to said concentration and determining said concentration of said target component in said liquid.

5,191,787

SOIL ERODIBILITY TESTING

Gregory J. Hanson, Stillwater, Okla., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Apr. 11, 1990, Ser. No. 507,440
Int. Cl.[5] G01N *17/00*
U.S. Cl. 73—86 **8 Claims**



1. An apparatus comprising:

an outer backwater tank defining a first aperture at an upper

portion thereof for egress of water, said outer backwater tank also defining a second aperture at a lower portion thereof through which soil to be tested may be exposed to the interior of said tank;

an inner liner positioned at least partially within said outer backwater tank, said inner liner defining a first aperture at an upper portion thereof through which a feed tube extends, said inner liner also defining a second aperture in a lower portion thereof through which soil to be tested may be exposed to the interior of said inner liner;

said feed tube having a lower terminus positioned within the interior of said inner liner, said feed tube having at said lower terminus thereof a nozzle, said nozzle defining a circular aperture having a rounded nozzle entrance and a nozzle exit diameter of about 13 millimeters;

said nozzle being positioned within the interior of said inner liner such that said nozzle will be about 0.22 meters from said soil to be tested and said nozzle is lower than said first aperture of said outer backwater tank, whereby when said outer backwater tank is filled with water said nozzle will be submerged, and;

foundation ring means sealed to said lower portion of said outer backwater tank for providing an essentially water tight seal between said lower portion of said outer backwater tank defining said second aperture and said soil to be tested.

5,191,788

MISFIRE DETECTION DEVICE FOR AN INTERNAL COMBUSTION ENGINE

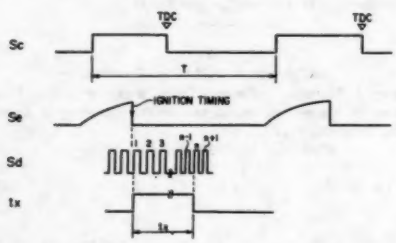
Yukinobu Nishimura, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 27, 1991, Ser. No. 799,278

Claims priority, application Japan, Nov. 28, 1990, 2-335333; Nov. 28, 1990, 2-335429

Int. Cl.[5] G01M *15/00*

U.S. Cl. 73—117.3 **7 Claims**



1. A misfire detection device for an internal combustion engine including ignition signal generation means for generating an ignition timing signal for controlling ignition timings of the internal combustion engine, said misfire detection device comprising:

crank angle signal generation means for generating pulses at predetermined angular intervals of a crank shaft of said internal combustion engine;

time measurement means for measuring a time length from each ignition timing as determined on the basis of said ignition timing signal, to a predetermined crank angle after said ignition timing, as determined on the basis of said pulses of said crank angle signal generation means; and

misfire detection means for detecting an occurrence of misfire on the basis of a variation of said time length measured by said time measurement means.

5,191,789

METHOD AND SYSTEM FOR DETECTING INTAKE AIR FLOW RATE IN INTERNAL COMBUSTION ENGINE COUPLED WITH SUPERCHARGER

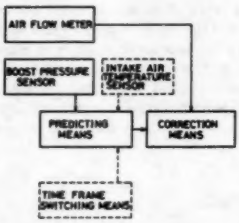
Junichi Furuya, Isesaki, Japan, assignor to Japan Electronic Control Systems Co., Ltd., Isesaki, Japan

Filed Nov. 26, 1991, Ser. No. 797,971

Claims priority, application Japan, Nov. 27, 1990, 2-321044; Nov. 27, 1990, 2-321046

Int. Cl.[5] G01M *15/00*

U.S. Cl. 73—118.2 **14 Claims**



1. A method of detecting an intake air flow rate for an internal combustion engine having a supercharger, including a throttle valve disposed within an induction passage downstream of a compressor of said supercharger, and an air flow meter disposed within the induction passage upstream of said compressor, the method comprises the steps of:

detecting a boost pressure by said supercharger;

predicting variations an amount of air in a boost chamber, on the basis of a volume of the boost chamber between said compressor and said throttle valve, and variations of a boost pressure by said supercharger; and

correcting an intake air flow rate detected by said air flow meter based on the predicted variations of the amount of air in said boost chamber.

5,191,790

CARRIER

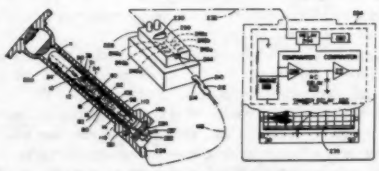
John L. Layport, Mattapoisett, Mass., assignor to Sippican, Inc., Marion, Mass.

Continuation of Ser. No. 543,691, Jan. 24, 1975, Pat. No. 5,046,359. This application Sep. 9, 1991, Ser. No. 756,832

The portion of the term of this patent subsequent to Sep. 10, 2008, has been disclaimed.

Int. Cl.[5] G01W *1/08*; B63G *8/22*; G01K *13/00*

U.S. Cl. 73—170.33 **5 Claims**



1. An assembly capable of being launched from a submarine to carry into seawater an element responsive to a property of the water to be measured by a measurement circuit, comprising

a carrier member coupled to said element,

a lifting body,

a tether for connecting said lifting body to said submarine to pull said lifting body through the water when said submarine is moving,

a supply of conductive cable connected to said element for connecting said element in said measurement circuit,

releasable coupling means for holding said member and said lifting body together during their launch from the subma-

rine and thereafter releasing said lifting body from said member,

means for storing said cable for payout between said lifting body and said member after release of said lifting body from said member, to permit movement of said member relative to said lifting body while said lifting body is being pulled through the water by said submarine via said tether,

said lifting body having means operable during said payout to maintain said lifting body at a distance above said submarine.

5,191,791

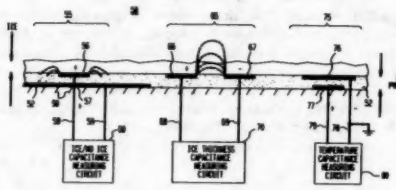
PIEZOELECTRIC SENSOR

Joseph J. Gerardi, 81 Crystal Dr., Dryden, N.Y. 13053; Philip R. Dahl, 16919 Strawberry Dr., Encino, Calif. 91436, and Gail A. Hickman, 81 Crystal Dr., Dryden, N.Y. 13053

Continuation-in-part of Ser. No. 295,722, Jan. 10, 1989. This application May 4, 1990, Ser. No. 518,043

Int. Cl.[5] G01C *21/00*

U.S. Cl. 73—178 R **14 Claims**



1. An apparatus for measuring localized ice thickness comprising:

an ice presence sensor having a first metallization layer facing towards an environment, a second metallization layer, and a dielectric layer between said first and second metallization layers, said second metallization layer being greater in surface area than said first metallization layer, wherein existence of ice in an area surrounding said first metallization layer causes a capacitance value associated with said ice presence sensor to change; and

an ice thickness sensor having a dielectric layer, and having first and second metallization layers located on one side of said dielectric layer and facing towards the environment, wherein existence of ice in an area between said first and second layers of said ice thickness sensor causes a capacitance value associated with said ice thickness sensor to change.

5,191,792

INSTRUMENT FOR INDICATING ALTITUDE OR DIRECTION

Hans Gloor, Biel, Switzerland, assignor to Recta AG, Biel, Switzerland

Filed Jul. 1, 1991, Ser. No. 723,816

Int. Cl.[5] G01C *21/00*

U.S. Cl. 73—178 R **11 Claims**

1. A hand-held instrument for selectively indicating at least two different variables, such as altitude and direction, said instrument comprising:

(a) a first sensor responsive to one of the variables to produce an analog signal corresponding thereto;

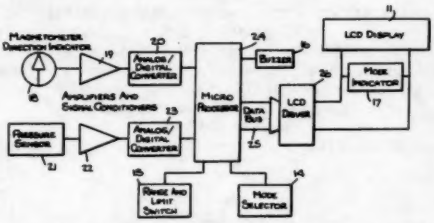
(b) a second sensor responsive to the other variable to produce an analog signal corresponding thereto;

(c) a microprocessor having an input and an output;

(d) means to convert the first sensor signal into a first digital value and to apply said value to the input of said microprocessor;

(e) means to convert the second sensor signal into a second digital value and to apply said value to the input of said microprocessor:

(f) a function selector switch coupled to said microprocessor to render it operative either in a first mode to process said first value to provide an output representing said first



variable, or in a second mode to process said second value to provide an output representing said second variable; and

(g) an electronic display coupled to the output of the microprocessor to indicate said first and second values.

5,191,793

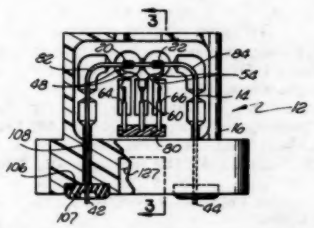
FLUID MASS FLOW METER DEVICE WITH REDUCED ATTITUDE SENSITIVITY

Charles F. Drexel, Rolling Hills Estates, and Richard F. Blair, Long Beach, both of Calif., assignors to Tylan Corporation, Carson, Calif.

Continuation of Ser. No. 283,050, Dec. 6, 1988, abandoned, which is a continuation of Ser. No. 150,463, Feb. 5, 1988, abandoned, which is a continuation of Ser. No. 9,008, Jan. 30, 1987, abandoned, which is a continuation of Ser. No. 834,150, Feb. 26, 1986, abandoned, which is a continuation of Ser. No. 588,586, Mar. 12, 1984, abandoned. This application Jul. 10, 1992, Ser. No. 912,007

Int. Cl.[5] G01F *1/68*

U.S. Cl. 73—204.22 **15 Claims**



1. A mass flow meter for measuring the flow rate of a fluid flowing in the interior of a sensing conduit having a pair of fluid flow ports, comprising:

a first self-heating coil element positioned along the flow path of the fluid externally of the sensing conduit closer to one of the fluid flow ports and a second self-heating coil element positioned along the flow path of the fluid externally of the sensing conduit closer to the other of the fluid flow ports, said coil elements being formed of temperature-sensitive resistance wire wound around the outside of the sensing conduit for sensing the temperatures of said coil elements modified by the fluid flow;

means for heating said coil elements;

means for detecting a temperature differential between said coil elements; and

a housing having wall structure spaced along said coil elements to substantially define the thickness of an ambient gaseous atmosphere along said coil elements, the maxi-

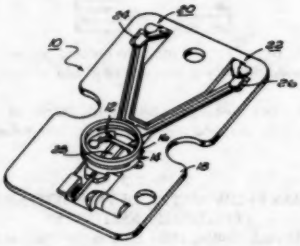
mum spacing between said wall structure, along said coil elements, being less than or equal to about 270 mils, said wall structure being formed of a metallic material, or of a polyamide material having a heat conductivity much larger than air.

5,191,794

INTEGRATED ACCELEROMETER WITH RESILIENT LIMIT STOPS

Henry C. Abbink, Westlake; Daryl K. Sakaida, Northridge, and Stanley F. Wyse, Encino, all of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed Dec. 24, 1990, Ser. No. 633,260
Int. Cl.[5] G01P *15/02*
U.S. Cl. 73—514 **5 Claims**



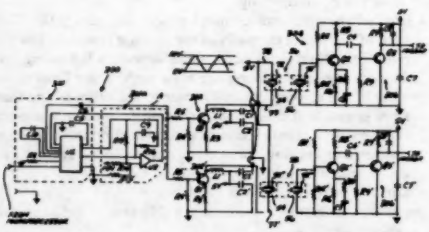
1. An integrated accelerometer comprising, in combination:
a) a planar support base having an internal aperture;
b) a pendulous mass including a pair of arms;
c) a pair of spaced flexible hinges, a first end of each being joined to said support base and a second end of each being joined to one of said arms, for pivotally supporting said pendulous mass within said aperture;
d) a pair of limit stops welded to opposed sides of said support base; and
e) each of said limit stops being generally U-shaped and resilient.

5,191,795

ULTRASONIC DETECTOR

George H. Fellingham, San Jose; Lance B. Koll, Santa Clara, and Timothy J. Hughes, Palo Alto, all of Calif., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 448,806, Dec. 11, 1989, abandoned, which is a continuation-in-part of Ser. No. 307,489, Feb. 6, 1989, Pat. No. 4,944,191, which is a division of Ser. No. 45,951, May 1, 1987, Pat. No. 4,821,558. This application Aug. 23, 1991, Ser. No. 753,009
Int. Cl.[5] G01N *9/24;* **G08B** *21/00*
U.S. Cl. 73—599 **28 Claims**



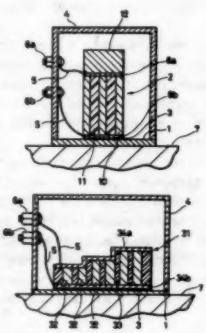
1. A device for detecting the presence of liquid-state fluid in a conduit, comprising:
(a) acoustic transmitter means for generating acoustic signals across the conduit, said acoustic transmitter means generating said acoustic signals in response to a drive signal at a selected frequency applied thereto;
(b) signal generating means for applying a drive signal to said acoustic transmitter means, said signal generator means continuously generating said drive signal over a sweep range of frequencies including said acoustic transmitter drive signal selected frequency so as to cause said acoustic transmitter means to periodically emit said acoustic signals; and
(c) acoustic receiver means responsive to said acoustic signals emitted by said acoustic transmitter means, for producing a signal indicative of whether or not liquid-state fluid is present in the conduit wherein said signals indicative of the presence of liquid-state fluid is periodically produced when said acoustic signals are received.

5,191,796

ACOUSTIC-EMISSION SENSOR

Teruo Kishi, Minato; Mitsuharu Shiwa, Fujisawa; Yoshinobu Ohara, Nara, and Yasuhiro Nakagami, Ikoma, all of Japan, assignors to Sekisui Kaseihin Koygo Kabushiki Kaisha, Nara, Japan

Filed Aug. 9, 1991, Ser. No. 744,096
Claims priority, application Japan, Aug. 10, 1990, 2-212622; Sep. 18, 1990, 2-249848; Feb. 28, 1991, 3-34610
Int. Cl.[5] G01N *29/04, 29/22*
U.S. Cl. 73—632 **8 Claims**



1. An acoustic-emission sensor comprising:
a receiving plate for receiving acoustic-emission waves; and
a composite synthetic resin-ceramic piezoelectric element for converting the acoustic-emission waves received by the receiving plate into electric signals, wherein the composite synthetic resin-ceramic piezoelectric element includes
a plurality of columnar ceramic piezoelectric bodies disposed in a synthetic-resin matrix, each columnar ceramic piezoelectric body polarized in a longitudinal direction, each columnar ceramic body arranged substantially mutually parallel to each other, and
first and second electrodes being provided at respective ends of said columnar ceramic piezoelectric bodies and the receiving plate being fixed to said first electrode,
wherein a weight for pressing down the composite synthetic resin-ceramic piezoelectric element on the receiving plate is attached to said second of the electrodes, the second electrode being opposite to the first electrode whereon the receiving plate is fixed.

5,191,797

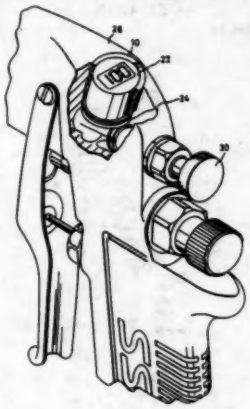
MINIATURE ELECTRONIC PRESSURE GAUGE

Rowland C. Smith, Wimborne, United Kingdom, assignor to ITW Limited, Windsor, United Kingdom

Filed Oct. 11, 1991, Ser. No. 775,196

Int. Cl.[5] G01L *9/00*

U.S. Cl. 73—714 **2 Claims**



1. A paint spray gun including a body defining an interior space through which air under pressure can be passed, a bore defined in said body leading from said interior space, pressure gauge means for indicating the air pressure in said interior space, means releasably retaining said pressure gauge means in said bore, and wherein said pressure gauge means includes a pressure transducer, a power source connected to supply power to said transducer, digital pressure display means for indicating air pressure sensed by said pressure transducer, and a sealed housing enclosing said pressure transducer, said power source and said display means.

5,191,798

PRESSURE SENSOR

Aki Tabata, Isehara; Jun Tajika; Hiroshi Inagaki, both of Hiratsuka; Yukio Kobayashi, Isehara, and Noritake Suzuki, Hiratsuka, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

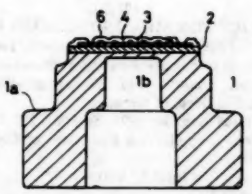
PCT No. PCT/JP89/00923, § 371 Date Jun. 10, 1991, § 102(e) Date Jun. 10, 1991, PCT Pub. No. WO90/03664, PCT Pub. Date Apr. 5, 1990

PCT Filed Sep. 7, 1989, Ser. No. 490,565

Claims priority, application Japan, Sep. 30, 1988, 63-247073

Int. Cl.[5] G01L *7/08, 9/06*

U.S. Cl. 73—727 **20 Claims**



1. A thin film pressure sensor module comprising a diaphragm body having an annular body segment with a thin diaphragm segment extending across one end of said annular body segment, said thin diaphragm segment having a pressure receiving side facing the interior of said annular body segment and having a reverse side opposite said pressure receiving side, a strain gauge located on said reverse side of said diaphragm segment, said annular body segment having a holding surface on the exterior thereof at a location remote form said thin diaphragm segment, said holding surface being suitable for engagement with a holding member in an assembly to mount the pressure sensor module in the assembly, the portion of said annular body segment located between said holding surface and said thin diaphragm segment having a first annular section adjacent said holding surface and remote from said thin diaphragm segment and a second annular section adjacent said thin diaphragm segment and remote form said holding surface, said second annular section having a circumference which is smaller than the circumference of said first annular section such that said first and second annular sections form a step in the exterior surface of said annular body segment such that the influence on said pressure receiving side of variations in the position of the holding member with respect to the holding surface is reduced.

5,191,799

MEASURED VALUE RECEIVER FOR VACUUM MEASUREMENT

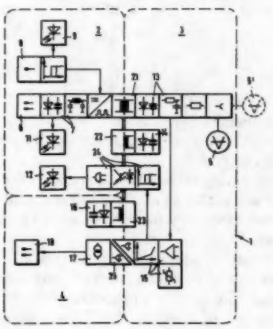
Anno Schoroth, Königsweiler, and Theo Koopmann, Brauweiler, both of Fed. Rep. of Germany, assignors to Leybold AG, Hanau, Fed. Rep. of Germany

Filed Jun. 27, 1990, Ser. No. 544,525

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1989, 8908069[U]

Int. Cl.[5] G01L *9/00*

U.S. Cl. 73—753 **12 Claims**



1. A measured value pickup for vacuum measurements, said pickup comprising:

sensor means for sensing characteristics of a vacuum and for producing a signal corresponding to values of the sensed characteristics;

electronic circuit means connected to the sensor means for supplying the sensor means with voltage and for converting and reshaping the signal produced by the sensor means into an electrical output signal suitable for transmission to and use by remotely located evaluation devices;

a transmitter housing;

said electronic circuit means being disposed in the transmitter housing and comprising a supply circuit providing a source of voltage, high-voltage and signal processing circuit means connected for stepping up the voltage provided by the supply circuit to the sensor means and for processing the signal produced by the sensor means, and output circuit means connected to the high voltage and signal processing means for outputting an output signal, corresponding to the processed signal of the sensor means,

adapted for transmission to the remote evaluation devices; and

means for galvanically separating the supply circuit, high-voltage and signal processing means, and output circuit means from one another.

5,191,800

ANEMOMETER

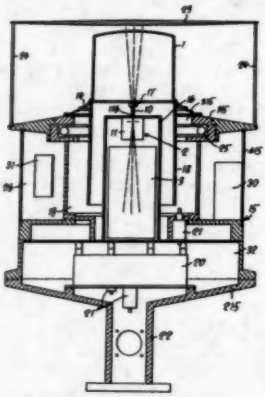
Remo Trombella, Pontremoli, Italy, assignor to Sitep S.p.A., Italy

Filed Jan. 29, 1991, Ser. No. 647,139

Claims priority, application Italy, Jan. 31, 1990, 12414 A/90

Int. Cl.[5] G01F 1/28

U.S. Cl. 73—861.74 17 Claims



1. An anemometer, comprising:

a) a box with a bottom part, side walls, an upper wall and chambers therein,

b) a flow-capturing surface which is responsive to a pressure force as exerted by an air flow and is mounted on the top of the box externally thereto, so as to be yieldable in all directions,

c) an electrical transducer fixed inside the box and comprising a control lever which is operatively connected to the flow-capturing surface so that the pressure force, as exerted by the air flow on the flow-capturing surface, is converted into electrical signals corresponding to the direction and to the extent of said force,

d) the flow-capturing surface being carried by the control lever of the electrical transducer and being fixed to a cylindrical hollow body arranged in an annular chamber which surrounds the electrical transducer and is of such a size as to permit the cylindrical body to oscillate in all directions transversely to its axis,

e) the cylindrical body having an upper part extending through an opening which is formed in the upper wall of the box and is closed by a annular collar made of resilient material, said annular collar having an inner circumference and an outer circumference and being sealingly fastened by at said inner circumference to the cylindrical body and at said outer circumference to the upper wall of the box,

f) said cylindrical body having an open bottom end and the electrical transducer being fixed to the top of a support which is fastened to the bottom part of the box and extends into the interior of the cylindrical body through the open bottom end thereof.

5,191,801

FLUID SAMPLING PUMP

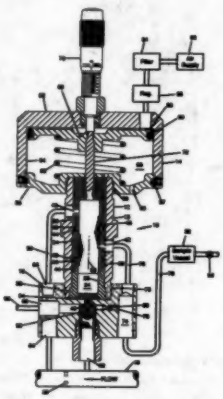
Paul V. Allen; Spencer M. Nimberger, and Robert L. Ward, all of Houston, Tex., assignors to Precision General, Inc., Houston, Tex.

Continuation of Ser. No. 496,368, Mar. 20, 1990, Pat. No. 5,074,154. This application Dec. 12, 1991, Ser. No. 806,594

The portion of the term of this patent subsequent to Dec. 24, 2008, has been disclaimed.

Int. Cl.[5] G01N 1/14

U.S. Cl. 73—864.34 19 Claims



1. A pump for pumping a selected quantity of fluid with each pump driving stroke from a fluid inlet port to a fluid outlet port, an inlet valve for selectively controlling fluid flow through the fluid inlet port, a pump body defining a pump bore therein, a piston slidably movable within the pump bore and having a fluid inlet end and an opposing operator end, an operator unit for reciprocating the piston within the pump bore, and a manifold interconnected with the pump body, the manifold having (a) a flow path therein extending from a manifold inlet port to a manifold outlet port, the flow path being in communication with the fluid inlet port in the pump body, (b) a filter positioned within the manifold and extending across a portion of the flow path, the filter defining a filtered zone within within the flow path adjoining the inlet port in the pump body, and an unfiltered zone within the flow path extending from the manifold inlet to the manifold outlet, such that filtered fluid enters the pump bore while unfiltered fluid bypasses the filter and passes out the manifold outlet port, (c) a purge passageway extending from the flow path to a purge outlet, (d) a purge valve for regulating fluid flow through the purge passageway.

5,191,802

DEVICE FOR MEASURING MASS FLOW

Hans-Georg Fassbinder, Sulzbach-Rosenberg, Fed. Rep. of Germany, assignor to Applikations und Technikzentrum für Energieverfahrens, Umwelt und Strömungstechnik, Sulzbach-Rosenberg, Fed. Rep. of Germany

Filed Aug. 30, 1991, Ser. No. 753,351

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1990, 4028141

Int. Cl.[5] G01F 1/82

U.S. Cl. 73—861.37 4 Claims

1. An apparatus for measuring the flow rate of a stream of material, comprising

(a) an impeller shaft;

(b) an impeller wheel secured to said impeller shaft;

(c) a first roller bearing having an inner race receiving and

supporting said impeller shaft; said first roller bearing having an outer race;

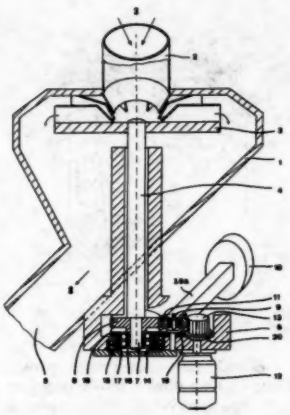
(d) a drive motor having an output shaft;

(e) a first gear secured to said output shaft;

(f) a second gear secured to said impeller shaft;

(g) a third gear meshing with said first and second gears, whereby said drive motor is drivingly connected to said impeller shaft by said first, second and third gears for rotating said impeller shaft with a predetermined rpm;

(h) means for directing the stream of material onto said



impeller wheel, whereby a braking torque is applied to the impeller wheel by the stream of material impinging thereon;

(i) a force measuring device operatively coupled to said third gear for measuring excursions thereof in response to the braking torque;

(j) a second roller bearing receiving and rotatably supporting the outer race of said first roller bearing; and

(k) drive means for rotating said outer race with an rpm being greater than or equal to the rpm of the impeller shaft.

5,191,803

DETECTION OF AN ANTICORROSION OIL APPLIED INTO A SHIP'S BALLAST

Roger A. Gamache, Ile des Soeurs, Canada, assignor to Mag Chem Inc., Boucherville, Canada

Filed Jan. 22, 1991, Ser. No. 644,919

Int. Cl.[5] G01M *19/00*; **G01N** *21/33*

U.S. Cl. 73—865.8 **5 Claims**

1. A method for detecting the presence of a discontinuity in an anticorrosion oil coating applied onto the interior walls of a metallic nautical ballast, comprising:

providing an anticorrosion oil for preventing corrosion in a metallic nautical ballast,

adding an oil-soluble tracer to said anticorrosion oil prior to the application as a coating on the internal walls of said nautical ballast, said tracer being substantially insoluble in water and rust, said tracer being also substantially inert to said oil, rust and water and primarily useful for emitting visible light under the effect of a black light,

applying said anticorrosion oil to the internal walls of said nautical ballast to form a coating,

after application of said coating, submitting the internal walls of said ballast coated with said anticorrosion oil to the effect of a black light, and

checking the continuity of the visible light being emitted by the oil coating, whereby presence of said oil coating is detected by visible light emitted by said tracer and absence of said oil coating is detected by the absence of any visible light emitted back.

5,191,804

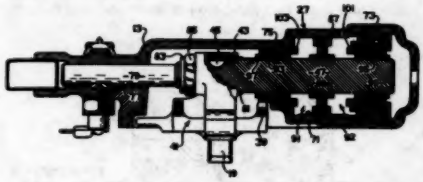
DUAL FORCE FLUID ACTUATED SHIFT DEVICE

Thomas A. Genise, Dearborn, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jul. 23, 1992, Ser. No. 919,349

Int. Cl.[5] B60K *20/10*

U.S. Cl. 74—335 **9 Claims**



1. A fluid operated shift actuator for a mechanical transmission having a neutral condition and a plurality of selectable ratios, said actuator being of the type comprising an actuator housing defining a piston bore within which is reciprocally disposed a main piston member having a centered position corresponding to said neutral condition, and a piston rod fixed relative to said piston member to reciprocate therewith, said piston member and said actuator housing cooperating with said piston rod to define a first fluid pressure chamber in fluid communication with a source of fluid pressure by means of a first fluid control means; said main piston member having an effective area under the influence of said first fluid pressure chamber to bias said main piston member and piston rod in a first direction corresponding to one of said plurality of selectable ratios; characterized by:

(a) said main piston member and said actuator housing cooperating with said piston rod to define a second fluid pressure chamber in fluid communication with said source of fluid pressure by means of a second fluid control means; said piston member having an effective area under the influence of said second fluid pressure chamber to bias said piston and piston rod in a second direction corresponding to another of said plurality of selectable ratios;

(b) a first auxiliary piston operably associated with said piston rod whereby movement of said piston rod in said first direction moves said first auxiliary piston in said first direction, said first auxiliary piston having an effective area under the influence of said first fluid pressure chamber to bias said first auxiliary piston and piston rod in said second direction, opposite said first direction, after said main piston member has been displaced from said centered position in said first direction; and

(c) a second auxiliary piston operably associated with said piston rod whereby movement of said piston rod in said second direction moves said second auxiliary piston in said second direction, said second auxiliary piston having an effective area under the influence of said second fluid pressure chamber to bias said second auxiliary piston and piston rod in said first direction, after said main piston member has been displaced from said centered position in said second direction.

5,191,805

ANTI-FRICTION NUT

John D. Parsons, Bethel, Conn., assignor to Norco, Inc., Ridgefield, Conn.

Filed Jan. 10, 1992, Ser. No. 818,886

Int. Cl.[5] F16H *55/17*

U.S. Cl. 74—459 **8 Claims**

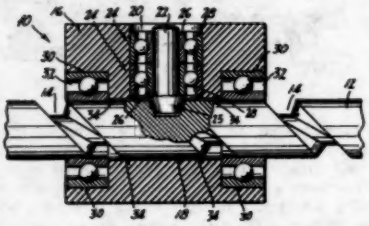
1. A light-weight miniature, high-speed light-load, anti-fric-

tion nut assemblage adapted to receive a grooved member having side walls in the groove thereof, comprising in combination:

a) a nut body having an axial bore with wall portions through which said grooved member can pass, and having a transverse bore extending entirely through said wall portions and transversely of its axis and intersecting said axial bore, said transverse bore having walls,

b) a roller pin disposed in said transverse bore, having a nose adapted for engagement with the side walls of the groove of said grooved member,

c) miniature anti-friction bearing means, mounting said roller pin in said transverse bore, said bearing means having inner and outer races and having innermost and outermost surfaces,



d) an adhesive securing an inner race of said bearing means to said roller in, and securing an outer race of said bearing means to the walls of said transverse bore,

e) additional anti-friction bearing means disposed in the axial bore of the nut body, for mounting the nut body on said grooved member for relative turning with respect thereto, said additional anti-friction bearing means having inner and outer races,

f) said nut body having a recess in its axial bore, forming walls in which recess the additional anti-friction bearing is disposed, and

g) an adhesive securing an outer race of said additional anti-friction bearing means to the walls of the said recess,

h) said transverse bore having a substantially cylindrical smooth wall surface devoid of projections.

5,191,806

SAFETY INTERLOCK DEVICE FOR A MOTOR VEHICLE GEARBOX CONTROL

Fosco De Silvestri, Maranello, Italy, assignor to Ferrari SpA, Modena, Italy

Filed Dec. 27, 1991, Ser. No. 813,916
Int. Cl.[5] F16H *59/00, 61/00*
U.S. Cl. 74—477 **3 Claims**

1. A motor vehicle gearbox control device for a gearbox of the type having

at least one shaft carrying a series of gears which are freely rotatable on said shaft, said shaft further carrying a plurality of coupling devices for selectively coupling the gears of said series to said shaft for rotation therewith,

said control device comprising:

a plurality of selector rods slidable in the gear box casing along parallel directions, each said selector rod carrying at least one fork member for actuation of a respective said coupling device, each selector rod being displaceable between a neutral position and at least one operative position, and

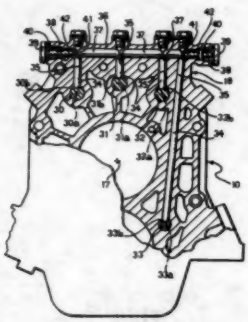
safety means comprising locking means for locking all said selector rods with respect to said gearbox casing with the exception of that which is selected at the time, said locking means comprising:

a series of locking dowels slidably mounted in respective seats of said gearbox casing and having active ends adapted to cooperate with respective reference notches provided on said selector rods, when these are in their neutral positions, whereby when a selector rod is moved away from its neutral position, the other selector rods are retained in their neutral positions by the engagement of said locking dowels within respective said reference notches,

the improvement comprising:

a plurality of said selector rods are disposed with their axes at the same distance from the axis of the shaft of the gear box with which said coupling devices are associated,

the seats for said locking dowels have separate substantially



parallel axes and open at their ends opposite the active ends of said locking dowels into a common cylindrical cavity extending transversely with respect to said seats, and

a train of locking pins is housed in said common cylindrical cavity, resiliently urged against one another and disposed in such a way that when a selector rod is actuated the associated said locking dowel projects into said common cylindrical cavity and constrains the locking pins to obstruct the exits from the seats of the locking dowels associated with the remaining said selector rods.

5,191,807

INDEXED GEAR-SHIFT MECHANISM

Yi-Hsung Hsu, No. 9, Lane 130, Sec. 1, Kwangfu Rd., Sanchung City, Taipei County, Taiwan

Filed Dec. 3, 1991, Ser. No. 802,126
Int. Cl.[5] B60K *20/00*
U.S. Cl. 74—501.6 **5 Claims**

1. An indexed gear-shift mechanism for a bicycle comprising:

(a) a housing comprising a base and a cover, said base being attached to handlebars of the bicycle, said cover being attached to said base, a cable port being formed in said housing for guiding a gear-shift cable having a block formed on an end thereof into and out of said housing;

(b) a ratchet plate defining an outer curvature and compris-

ing a groove formed therein conforming to said curvature, an inner row of teeth projecting inward from said curvature into said groove, and an outer row of teeth projecting outward from said curvature, teeth of said inner row having a front side, teeth of said outer row having a front side and a backside; said ratchet plate having a through hole formed therethrough and defining an axis of rotation thereof;

(c) an up-shifting means for shifting said gear-shift mechanism to a higher gear comprising:

(i) an up-shifting lever having an internal portion, an external portion, and a through hole being formed and defining an axis of rotation therebetween, said external portion projecting through a first slot formed in said housing to an outside of said housing;

(ii) an inner pawl and an outer pawl protruding from said internal portion of said up-shifting lever and being spaced apart such that said outer pawl is positioned outside said groove and said inner pawl is positioned in said groove; and

(iii) a first spring for urging said outer pawl of said up-shifting lever toward said ratchet plate to bear thereagainst;

said up-shifting means being pivotally attached to said base by fastening means utilizing said through hole of said up-shifting lever;

(d) a down-shifting means for shifting said gear-shift mechanism comprising:

(i) a down-shifting lever having an internal portion and an external portion, said internal portion being fixedly attached to said ratchet plate by fastening means and having a through hole formed therethrough, corresponding to that of said ratchet plate, and defining an axis of rotation of said down-shifting lever, said external portion projecting outside said housing through a second slot formed in said housing; and

(ii) a second spring for urging said ratchet plate toward said cable port such that said front side of a tooth of said outer row bears against said outer pawl;

said down-shifting means being pivotally attached to said base by fastening means utilizing said through holes of said ratchet plate and said internal portion of said down-shifting lever; and

(e) retaining means for retaining the block of the gear-shift cable being formed in at least one of said down-shifting lever and said ratchet plate;

whereby when an external force is applied on said external portion of said up-shifting; ever, said outer pawl is drawn off said front side of said tooth of said outer row and said inner pawl is drawn toward said curvature, said outer pawl clearing a vertex of said tooth, allowing said ratchet plate to rotate toward said cable port, urging the gear-shift cable out of said housing, said ratchet plate rotating until said front side of a tooth of said inner row is retained by said inner pawl; and when said external force is removed, said first spring rotates said up-shifting lever toward said ratchet plate, said inner pawl being drawn off said front side of said tooth of said inner row, said ratchet plate rotating until said front side of a next adjacent tooth of said outer row is retained by said outer pawl; and

whereby when an external force is applied on said external portion of said down-shifting lever, said ratchet plate rotates away from said cable port, said backside of a tooth of said outer row being drawn toward said outer pawl, said backside of said tooth of said outer row contacting said outer pawl and urging said outer pawl outward, said outer pawl clearing a vertex of said tooth, said inner portion of said up-shifting lever rotating toward said ratchet plate, said outer pawl contacting said front side of said tooth of said outer row, said external force being removed or constantly applied.

5,191,808

ACTUATOR END STOP ARRANGEMENT

Michael A. Calvert, Kirkaldy, Great Britain, assignor to Prime Actuator Control Systems Limited, Glenrothes, United Kingdom

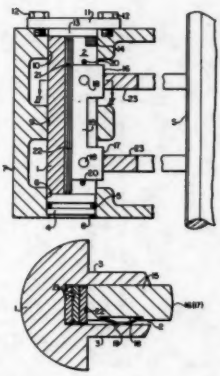
PCT No. PCT/GB90/00615, § 371 Date Dec. 20, 1991, § 102(e) Date Dec. 20, 1991, PCT Pub. No. WO90/12964, PCT Pub. Date Nov. 1, 1990

PCT Filed Apr. 20, 1990, Ser. No. 768,756

Claims priority, application United Kingdom, Apr. 20, 1989, 8908985

Int. Cl.[5] F01B *31/14*; G05G *1/04*

U.S. Cl. 74—526 **4 Claims**



1. An end stop arrangement for angular motion of an arm means in an actuator wherein linear motion is received by the arm means and is converted by the arm means into angular motion and delivers such angular motion to a shaft, the arrangement comprising an assembly of a stop bar formed from a cylindrical rod but having a lengthwise slot therein, securing means for securing the stop bar to a fixed support within the actuator casing both in a sense lengthwise of the stop bar and angularly about its axis, a stop plate slidably secured in the slot and presenting a stop edge for engagement with the arm means, the position of the stop edge relative to the stop bar being adjustable by the insertion or removal of the spacer means in the slot and engaging an edge of the stop plate remote from the stop edge.

5,191,809

EXERCISE BICYCLE FLYWHEEL

Marion N. Craig, Calhoun, Ill., assignor to Roadmaster Corporation, Olney, Ill.

Filed Sep. 16, 1991, Ser. No. 760,700

Int. Cl.[5] G05G *1/00*; F16F *15/22, 15/10*

U.S. Cl. 74—572 **2 Claims**

1. An exercise bicycle flywheel comprising a right half and a left half which are matingly connected; each said half includ-

ing a central hub and a rim portion extending around the periphery of said flywheel, said rim portion having a concave inner surface;

said rim portions of said right and left halves defining an annular cavity around the periphery of said flywheel when said right and left halves are joined;

said cavity being filled with a heavy, flowable, settable material; and

an annular wall on an outer side of said rim portion of each flywheel half, an annular lip on an inner side of said rim portion of one of said halves, and an annular groove on an inner side of said rim portion of said other flywheel half; said outer walls covering one another and said annular lip being received in said annular groove when said two

halves are brought together to make said cavity water tight.

5,191,810

VEHICLE MODULAR CLUTCH ATTACHING ARRANGEMENT

Barrie G. Craft, 7566 West Rd., Washington, Mich. 48094; Peter Doll, 6421 Elsey Dr., Troy, Mich. 48098, and Frank Martin, Matthias Gruenewald Ring 67, 8720 Schweinfurt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 812,488, Dec. 23, 1991, abandoned. This application Aug. 17, 1992, Ser. No. 929,479

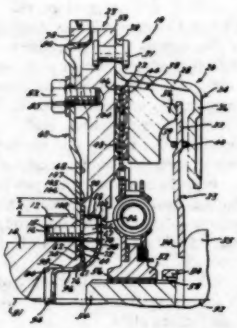
Int. Cl.[5] **G05G** *01/00, 03/00;* **F16D** *13/00;* **F16B** *09/00*

U.S. Cl. 74—572 **7 Claims**

1. A vehicle manual transmission modular clutch attaching arrangement including a flywheel disc assembly adapted to be rotated about a central axis by an engine crankshaft at one output end thereof, said crankshaft rotatable about said central axis with one end thereof formed with a radial collar having a cylindrical outer periphery and a plurality of circumferentially distributed apertures each adapted to receive an associated inner fastener extending through an aligned inner hole of an automatic transmission drive plate for pre-attachment thereto, said drive plate provided with a plurality of circumferentially distributed outer holes, each said inner fastener including a head portion and a shaft portion with the shaft portion extending through an associated drive plate inner holes and engaging an associated aperture in said collar so as to clamp said drive plate on said collar one end, said crankshaft one end formed with an axially extending central bore concentric with said crankshaft axis, said crankshaft one end formed with an axially extending concentrically disposed annular neck portion, said drive plate having a central circular aperture sized for snug reception on said annular neck portion thereby positioning a starter ring gear, fixed on the outer periphery of said drive plate, in concentric relation with said crankshaft central axis, an arrangement enabling the pre-attachment of said drive plate on said crankshaft for subsequent combination with either a manual transmission modular clutch assembly or an automatic transmission comprising:

a flywheel disc for said modular clutch, said flywheel disc having one side adapted to face toward said crankshaft one end with an opposite side thereof facing away from said crankshaft one end, a central circular opening in said flywheel disc having a predetermined diameter substantially equal to the diameter of said collar outer periphery, said central opening bordered by a countersunk annular recess formed in said flywheel disc one side, said flywheel disc recess having an axially extending cylindrical internal shoulder concentric with said modular clutch central axis and a radially disposed locating wall portion;

a pilot member, having a central axially extending cup portion and an outwardly extending radial flange portion,



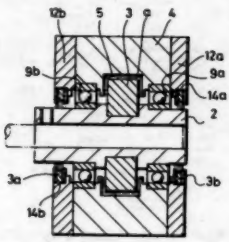
said axial cup portion having an outer cylindrical surface adapted for frictional press-fit engagement with said crankshaft central bore and said radial flange portion having outer circular edge means adapted for press-fit frictional engagement with said flywheel disc recess internal shoulder such that a principal axis of said pilot member axis cup portion coincides with said crankshaft central axis;

said pilot member central axial cup portion engaging said crankshaft central bore and said pilot member radial flange portion engaging said flywheel disc recess internal shoulder such that each said drive plate outer hole is aligned with an associated mounting bore in said flywheel disc one side, wherein upon a plurality of outer fasteners extending through their associated drive plate circumferentially distributed outer holes and engaging associated aligned flywheel disc mounting bores said modular clutch flywheel disc is positively rigidly attached to said drive plate enabling said flywheel disc to be directly rotatively driven by said crankshaft.

5,191,811
DAMPER DEVICE FOR A MOTOR

Toshiharu Kogure, Narashino, Japan, assignor to Seiko Seiki Kabushiki Kaisha, Japan

Division of Ser. No. 569,374, Aug. 13, 1990, Pat. No. 5,081,882, which is a continuation of Ser. No. 234,816, Aug. 22, 1988, abandoned. This application Oct. 2, 1991, Ser. No. 771,305
Claims priority, application Japan, Sep. 4, 1987, 62-135671[U]
Int. Cl.[5] F16F *1/10*
U.S. Cl. 74—574 **4 Claims**



1. A damper device for damping oscilllations of a rotationally driven shaft, comprising: a boss section connectable during use of the damper device to a rotationally driven axially extending shaft so that the boss section is rotationally driven by the shaft; a ring-shaped magnet carried by and extending radially outwardly of and circumferentially around the boss section; a mass inertia section encircling the boss section and the magnet, the mass inertia section having an annular concave portion facing the boss section, the magnet extending radially outwardly into the concavity of the concave portion and being spaced from the surface of the concave portion to define therebetween an annular gap; a viscous magnetic fluid disposed in the annular gap for imparting a viscous resistance to rotation of the mass inertia section when the boss section is rotationally driven, the magnetic fluid being confined within the annular gap by the magnetic field created by the ring-shaped magnet; mechanical bearing means rotatably and mechanically supporting the mass inertia section directly on the boss section, the mechanical bearing means comprising a pair of roller bearings interposed between the boss section and mass inertia section on either side of the ring-shaped magnet; a pair of annular cover plates connected to opposed sides of the mass inertia section outwardly of the respective roller bearings, each cover plate carrying a ring-shaped magnet having an inner peripheral surface which is radially spaced from another peripheral surface of the boss section; and viscous magnetic fluid confined in the spaces between the inner and outer peripheral surfaces by the magnetic fields created by the ring shaped magnets.

5,191,812

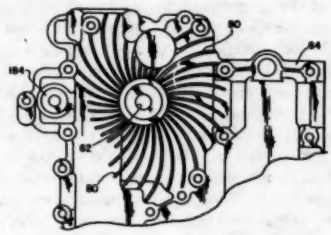
Patent Not Issued For This Number

5,191,813
HYDROSTATIC TRANSAXLE HAVING A FAN AND PULLEY ARRANGEMENT

Dale I. Havens, Addison, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Jul. 22, 1991, Ser. No. 734,220
Int. Cl.[5] F16H *57/04*
U.S. Cl. 74—606 R **12 Claims**

1. A hydrostatic transmission comprising:
a housing having an input aperture and external radially projecting fins outwardly curved from said input aperture in a generally helical fashion;
an input drive shaft extending through said input aperture;
a hydrostatic unit within said housing operably connected to said input drive shaft; and
a fan disposed on said input drive shaft external to said

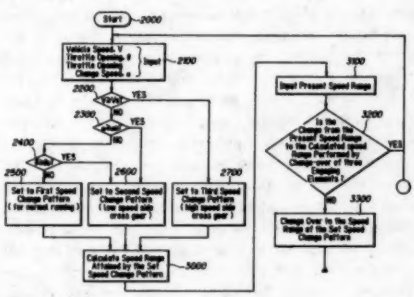


housing, said fan including a plurality of blades extending axially towards said housing whereby a helical air flow pattern is imparted from said fan over said radially projecting fins thereby providing a substantially non-turbulent air flow along said fins.

5,191,814
SPEED CHANGE CONTROL SYSTEM IN AUTOMATIC TRANSMISSION

Masahiko Ando; Masahiro Hayabuchi, both of Anjo; Kazumasa Tsukamoto, Toyota; Hideo Tomomatsu; Yasuo Hojo, both of Nagoya, and Kunihiro Iwatsuki, Toyota, all of Japan, assignors to Aisan A W Kabushiki Kaisha and Toyota Jidosha Kabushiki Kaisha, both of Aichi, Japan

Filed Jul. 31, 1991, Ser. No. 738,381
Claims priority, application Japan, Aug. 2, 1990, 2-205881
Int. Cl.[5] B60K *41/06*
U.S. Cl. 74—866 **1 Claim**



1. A speed change control system of an automatic transmission, comprising: a transmission including a gear train for attaining a plurality of speed ranges by selective engagement and disengagement of a plurality of frictional engaging elements, a hydraulic controller for controlling the selective engagement and disengagement of the frictional engaging elements of the transmission, and an electronic controller for

controlling said hydraulic controller and attaining a change-over between a plurality of speed change patterns comprising a row of speed ranges of different gear ratios and a speed change diagram for controlling the gear shift between speed ranges in said speed range row,

said electronic controller including a speed change pattern selecting means, a present speed range detecting means and a speed change pattern determining means,

said speed change pattern selecting means for selectively selecting one speed change pattern out of a first and a second speed change patterns and outputting a signal to said speed change pattern determining means based on outputs from a throttle opening sensor and a vehicle speed sensor, wherein said first speed change pattern comprises a row of speed ranges greater than a gear ratio width relative to changes in vehicle speed at a region where a throttle opening is less than a preset throttle opening value and a speed change diagram for controlling the gear shift between speed ranges included in said row of speed ranges at a region of the throttle opening being less than said preset value, and wherein the second speed change pattern comprises a row of speed ranges less than a gear ratio width relative to changes in vehicle speed at a throttle opening greater than said preset value and a speed change diagram for controlling the gear shift between speed ranges included in said row of speed ranges at a region of the throttle opening being greater than said preset value,

said present speed range detecting means for detecting the present speed range in the transmission and outputting a detected signal to said speed change pattern determining means, and

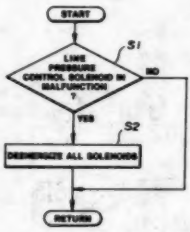
said speed change pattern determining means for judging in a comparative manner whether the gear shift from the present range detected by the present speed range detecting means to a speed range in the speed change pattern outputted by the speed change selecting means falls under any one of a predetermined prohibited conditions based on the signal inputted from said speed change pattern selecting means and said present speed range detecting means; and means for outputting to said hydraulic controller a signal indicating said gear shift and change-over to a speed range according to the selected speed change pattern selected by said speed change pattern determining means that said gear shift does not fall under any of said prohibited conditions, and outputting to said hydraulic controller a signal to temporarily carry out said speed range change-over to a speed range which is included in a row of speed ranges to be controlled by a speed change diagram in a temporary speed change pattern and gear shift thereto when it is judged by said speed change pattern determining means that said gear shift does not fall under any one of said prohibited conditions and outputting a signal indicating a re-starting operation of said electronic controller when it is judged by said speed change pattern determining means that said gear shift falls under one of said prohibited conditions, wherein said predetermined prohibited conditions include change-overs between two newly occurred speed ranges requiring simultaneous engagement and/or disengagement of three or more of frictional engaging elements in which the engagement and/or disengagement of the frictional engagements was not previously done and a changeover between two adjacent speed ranges in each of said row of speed ranges including said first, second and temporary speed change patterns.

5,191,815

CONTROL SYSTEM FOR AUTOMOTIVE AUTOMATIC TRANSMISSION

Joji Kouta, Shizuoka, Japan, assignor to Jatco Corporation, Japan

Filed Nov. 22, 1991, Ser. No. 795,989
Claims priority, application Japan, Nov. 27, 1990, 2-324446
Int. Cl.[5] B60K *41/06*
U.S. Cl. 74—866 **9 Claims**



1. A control system for controlling a hydraulically operated automatic transmission, comprising:

a plurality of solenoids, one of said solenoids being a line pressure control solenoid having at least one electrical input signal thereto, said line pressure solenoid, when electrically deenergized, increases the line pressure to its highest level;

first means for detecting a malfunction of said line pressure control solenoid by sensing input signals errors to said first means; and

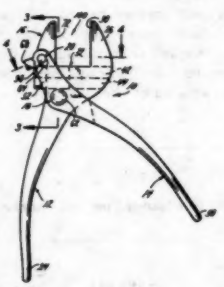
second means for electrically deenergizing all of said solenoids when said first means detects the malfunction of said line pressure control solenoid whereby the line pressure is increased to it's highest level for permitting said transmission to operate at a high speed ratio.

5,191,816

PARALLEL JAW PLIERS WITH REINFORCED CONSTRUCTION FOR SYMMETRIC FORCE DISTRIBUTION

Gary D. Burpo, 2528 Manchester Dr., Springfield, Ill. 62704

Filed Nov. 20, 1991, Ser. No. 796,035
Int. Cl.[5] B25B *7/12*
U.S. Cl. 81—361 **14 Claims**



1. A pliers apparatus comprising:

a first lever having a first jaw surface and a first handle formed thereon;

a jaw member connected to the first lever for translatory movement relative thereto, the jaw member having a second jaw surface formed thereon, the second jaw surface being parallel to and mutually opposed by the first jaw surface as the jaw member is moved relative to the first lever, the first and second jaw surfaces defining a

working area therebetween for receiving objects to be engaged between the first and second jaw surfaces;

a second lever having a pair of spaced arms and a second handle formed thereon, the first lever and the jaw member begin received in a space between the pair of arms and the pair of arms being connected to both the first lever and the jaw member for pivoting movement relative thereto, the pair of arms having a configuration that positions the pair of arms outside the working area defined between the first and second jaw surfaces and prevents the pair of arms from extending over the working area from opposite sides of the jaw member for all adjusted relative positions of the first and second jaw surfaces as the second jaw is moved relative to the first jaw;

a cam surface is formed on a side of the jaw member; and

a back brace is formed on the pair of arms extending across the space between the pair of arms and connecting the pair of arms, the back brace engages in sliding contact with the cam surface of the jaw member as the second jaw surface is moved toward and away form the first jaw surface.

5,191,817

MACHINING METHOD FOR THE USE OF A COMPLEX MACHINING MACHINE TOOL

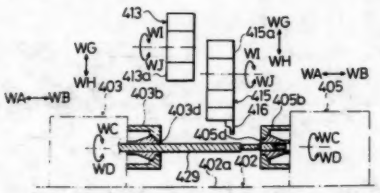
Yukio Mitsukuchi, Aichi; Shuichi Hashimoto, Gifu; Shoji Momoi, Gifu; all of Japan, assignors to Yamazaki Mazak Corporation, Aichi, Japan

Division of Ser. No. 182,452, Apr. 18, 1988, Pat. No. 4,949,444. This application Nov. 21, 1989, Ser. No. 439,939

Claims priority, application Japan, Apr. 17, 1987, 62-58205[U]; Apr. 28, 1987, 62-105439; Apr. 28, 1987, 62-105441; Apr. 28, 1987, 62-105442; Apr. 28, 1987, 62-105443; Apr. 28, 1987, 62-105444; May 29, 1987, 62-134150; May 29, 1987, 62-134151; Jun. 23, 1987, 62-156054; Jun. 23, 1987, 62-156055; Jul. 10, 1987, 62-172488; Jul. 24, 1987, 62-185006; Sep. 25, 1987, 62-241521; Oct. 13, 1987, 62-258012; Dec. 24, 1987, 62-327652

Int. Cl.[5] B23B *1/00*

U.S. Cl. 82—1.11 **4 Claims**



1. A machining method in a machine tool comprising:

providing a machine tool having a frame and first and second spindle stocks on said frame disposed so as to face each other with a space provided in said frame therebetween, said first and second spindle stocks having first and second workpiece spindles rotatably supported thereby, respectively, each said workpiece spindle having a chuck for jointly holding therebetween, or independently and separately holding, a workpiece to be machined, said machine tool further comprising:

said first and second spindle stocks on said frame having means capable of moving at least one of said spindle stocks relative to the other only in the direction of a central axis of said first and second workpiece spindles and transferring a workpiece from one of said first and second spindle stocks to the other said spindle stock over said space,

first and second tool rests disposed on said frame on the same side of said central axis corresponding to and adjacent to said first and second workpiece spindles, respectively, each said tool rest having means for moving said tool rest in at least a direction substantially perpendicular to said central axis of said first and second workpiece spindles and each of said tool rests having a side thereof oriented substantially perpendicular to said central axis and facing the other said tool rest,

first and second rotatable tool holding turrets disposed on said first and second tool rests, respectively, free to be rotated on an axis parallel to said direction of said central axis of said first and second workpiece spindles, said first rotatable tool holding turret disposed on said side of said first tool rest facing said second workpiece spindle and said second rotatable tool holding turret disposed on said side of said second tool rest facing said first workpiece spindle, said first and second turrets being disposed over said space,

said first turret having a peripheral portion with a plurality of tool installation portions formed thereon such that when one of said plurality of tool installation portions is selectively positioned at a position for machining a workpiece, said positioned tool installation portion protrudes toward said central axis of said workpiece spindle beyond a front portion of the workpiece spindle central axis side of said first tool rest having said first turret installed thereon,

said second turret having a peripheral portion with a plurality of tool installation portions formed thereon such that when one of said plurality of tool installation portions is selectively positioned at a position for machining a workpiece, said positioned tool installation portion protrudes toward said central axis of said workpiece spindle beyond a front portion on the workpiece spindle central axis side of said second tool rest having said second turret installed thereon,

a plurality of tools on said tool installation portions of said first tool holding turret, said tools each having a workpiece machining portion, and each said workpiece machining portion of said plurality of tools positioned on said tools and said tools positioned on said first tool holding turret such that said workpiece machining portions are directed toward said first workpiece spindle such that said tools are selectively positionable by said first tool holding turret to machine a workpiece on said first workpiece spindle;

a plurality of tools on said tool installation portions of said second tool holding turret, said tools each having a workpiece machining portion, and each said workpiece machining portion of said plurality of tools positioned on said tools and said tools positioned on said second tool holding turret such that said workpiece machining portions are directed toward said second workpiece spindle such that said tools are selectively positionable by said second tool holding turret to machine a workpiece on said second workpiece spindle, and

at least one tool among said tools installed on said first and second tool holding turrets being an inside diameter machining tool;

said method further comprising execution of the following steps at least once:

after a workpiece is held by said first and second spindle stocks and a predetermined machining operation is performed, releasing the holding relation between said second spindle stock and said workpiece, relatively moving said second spindle stock toward said first spindle stock and thereafter again holding said workpiece with said first and second workpiece spindles;

subsequently releasing the holding relation between said first spindle stock and said workpiece and relatively moving said second spindle stock together with said workpiece to a position a predetermined distance away from said first spindle stock, wherein a raw portion of said workpiece is exposed by a predetermined length from said first spindle stock; and

after said raw portion has been exposed by said predetermined length from said first spindle stock, holding said workpiece with both said first and second spindle stocks and machining said raw portion.

5,191,818

PROCESS AND FACILITY FOR SHEARING TO LENGTH STEEL BARS COMING FROM A ROLLING MILL

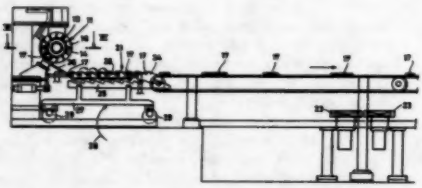
Gianfranco Mantovan, Busto Arsizio, and Gianfranco Fay, Milan, both of Italy, assignors to Pomini Farrel S.p.A., Varese, Italy

Continuation of Ser. No. 556,295, Jul. 20, 1990. This application Mar. 10, 1992, Ser. No. 847,887

Claims priority, application Italy, Jul. 31, 1989, 21398 A/89

Int. Cl.[5] B21B *43/04*

U.S. Cl. 83—27 **5 Claims**



5. A process for continuously cutting to commercial length steel bars coming from a rolling mill, which comprises:

a) feeding in an axial direction a rolled product from the rolling mill to a first of a plurality of circumferential collection chambers in a collecting drum;

b) shearing the rolled product to form a first bar of commercial length and a new leading edge on the rolled product;

c) braking the first bar of commercial length in phase with the shearing step of the first bar of commercial length, in the first of a plurality of collection chambers by drive rolls which face the interior of the collection chambers; and

d) rotating the collection drum in phase with the shearing of the first bar and continuous feeding of the rolled product to introduce the new leading edge of the rolled product into a second of a plurality of collection chambers in the collecting drum and to distribute the first bar of commercial length onto conveyor means.

5,191,819

CUTTER ASSEMBLY FOR STRAND CUTTING MACHINE AND RESIN MATERIAL CUTTING ASSEMBLY

Tadaichi Hoshi, Tochigi, Japan, assignor to Kabushiki Kaisha Hoshi Plastic, Tochigi, Japan

Filed Jun. 14, 1991, Ser. No. 715,245

Claims priority, application Japan, Jun. 20, 1990, 2-161978; Apr. 25, 1991, 3-95089

Int. Cl.[5] B26D *1/29*

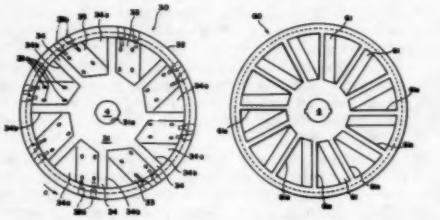
U.S. Cl. 83—349 **9 Claims**

1. A resin material cutting assembly, comprising:

(a) a fixed cutter member over which a resin material is to be supplied; and

(b) a rotary cutter member coacting with said fixed cutter member, said rotary cutter member including a rotary shaft extending in the feed direction of the resin material and supporting said rotary cutter member and a plurality of blades arranged about said rotary shaft to be spaced apart and extending radially and disposed in a forward inclined posture in the direction of rotation, each said blade having a cutting edge at its forward position toward said fixed cutter member in the direction of rotation,

wherein said rotary cutter member includes a central portion connected to said rotary shaft, and a ring portion disposed around said rotary shaft concentrically thereof, an outer surface of said central portion and a confronting inner surface of said ring portion each having a corresponding plurality of grooves each disposed in a forward inclined



posture in the direction of rotation, each said blade being fitted at opposite ends in corresponding grooves of said central portion and said ring portion.

5,191,820

FEED DRIVE FOR A CUTTING MACHINE FOR CUTTING FOODS

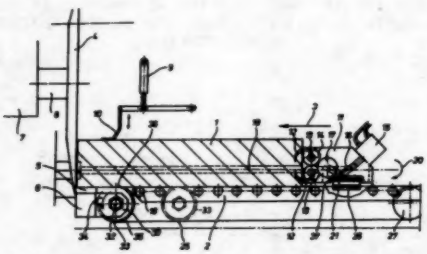
Franz Hartmann, Simmerberg, Fed. Rep. of Germany, assignor to Natec, Reich, Summer GmbH & Co. KG, Fed. Rep. of Germany

Filed Jun. 20, 1991, Ser. No. 717,984

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1991, 9104588[U]

Int. Cl.[5] B26D *7/06*

U.S. Cl. 83—409 **9 Claims**



5. A cutting machine for cutting elongated products into slices, comprising:

undriven roller conveyor means for supporting a product to be sliced, the conveyor means having a forward end and a rear end;

cutter means adjacent the forward end of the conveyor means for cutting slices from a front end of the product;

first feed means for driving the product forwardly in a feed direction along the conveyor means into the cutting range of the cutter means, the first feed means comprising claw means for gripping a rear end of the product, and drive means for driving the claw means in the feed direction; and

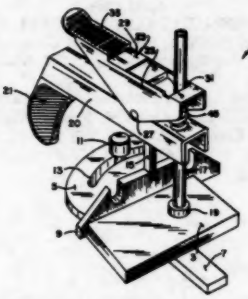
second feed means for guiding a forward portion of the product towards said cutter means in synchronism with the driving of the claw means, said second feed means being located adjacent said cutter means and comprising at least one feed roller separate from said roller conveyor means for engaging a bottom surface of the product in the vicinity of said cutter means in a force-locking and form-locking manner.

5,191,821

LEVER LOCK HOLD DOWN MECHANISM

James I. Metzger, Jr., Ballwin, and Frank Tomiser, Jr., St. Louis, both of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Continuation-in-part of Ser. No. 507,459, Apr. 11, 1990, abandoned. This application Nov. 29, 1991, Ser. No. 800,212
Int. Cl.[5] B27B 5/29
U.S. Cl. 83—425 10 Claims



1. A lever lock hold down mechanism for clamping workpieces to a miter gauge including a base for supporting workpieces, a generally vertically directed head extending upwardly from said base, and clamping means extending upwardly from said head and overlying said base for clamping workpieces against the base and head, said clamping means including a vertically adjustable rod having a clamping foot at its lower end, a spring biased rod gripper mechanism which is capable of being moved from a free mid position to a lower clamping position or to an upper released position relative to said rod, said spring biased rod gripper mechanism engaging and gripping said rod in its lower clamping position while being disengaged from said rod in its upper released position for vertical adjustment of said rod to accommodate workpieces of different thickness, lever lock means for applying a downward force to the spring biased rod gripper mechanism for overcoming the spring force thereof and for moving the rod gripper mechanism to its lower clamped position for continuous gripping engagement with said rod so as to apply a clamping force through said clamping foot to workpieces resting on said base and positioned against said head, and said lever lock means being moved upwardly to a free mid position for partially disengaging the spring biased rod gripper mechanism relative to said rod so as to permit downward movement while limiting upward movement of said rod, and means for completely disengaging the spring biased rod gripper mechanism from said rod when said lever lock means is moved to an upper released position.

5,191,822

ADJUSTABLE CLAMP JAWS

John J. Borzym, 4820 School Bell La., Birmingham, Mich. 48010

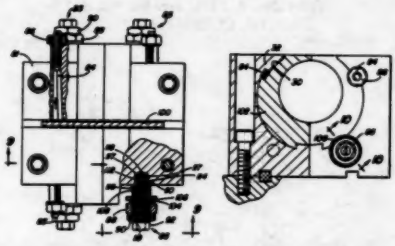
Continuation-in-part of Ser. No. 661,504, Feb. 26, 1991. This application Nov. 15, 1991, Ser. No. 792,711
Int. Cl.[5] B26D 7/02; B25B 1/24
U.S. Cl. 83—466 17 Claims

1. An assembly comprising:

a clamp having at least one body and one liner, said liner having a longitudinally extending rear face supported on said body, and a longitudinally extending forward face for holding a part to be clamped;

a cutting element movable adjacent to one longitudinal end face of said liner; and

a threaded member having a radially outer portion received in a channel in said rear face of said liner, said threaded member being movable longitudinally relative to said body, with said radially outer portion rotating within said channel in said rear face, and causing said liner to move longitudinally, such that said liner is longitudinally adjusted to any one of a plurality of longitudinal positions relative to said body towards and away from said cutting element to control the clearance between said one longitudinal end face of said liner and said cutting element.

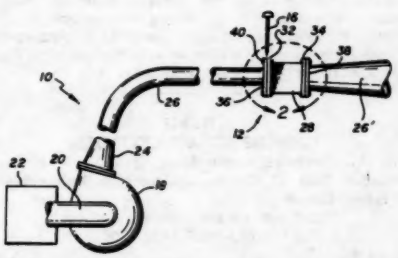


5,191,823

HYDRAULIC KNIFE ASSEMBLY WITH CROSS-CUT KNIFE

Thomas R. Miller, and David E. Frickey, both of Caldwell, Id., assignors to J. R. Simplot Company, Caldwell, Id.

Filed Apr. 17, 1992, Ser. No. 870,666
Int. Cl.[5] B26D 1/03
U.S. Cl. 83—857 7 Claims



1. An hydraulic knife assembly for removable in-line mounting to a flow conduit adapted for passage of a product to be cut, wherein the product is propelled through the flow conduit by an hydraulic flow stream, said knife assembly comprising:

a knife housing defining an internal flow passage extending along a first direction;

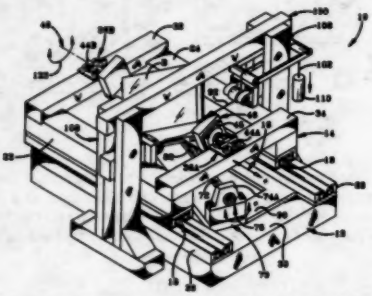
an array of knife blades mounted within said knife housing to extend across said flow passage and defining cutting edges presented in an upstream direction;

means for removably mounting said knife housing in-line with said flow conduit, for flow-through passage of the product to be cut and the propelling hydraulic flow stream through said internal flow passage whereby the product is cut by said knife blades into strips;

means defining a transversely open slot disposed generally at an upstream end of said knife housing, said slot being oriented generally perpendicular to said first direction; and

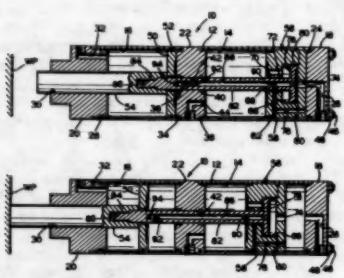
a cross-cut knife having a size and shape for reception into said slot, to extend from a position outside said internal flow passage through said slot and into said internal flow passage, and to be thrust in a direction generally transversely across and generally perpendicular to said internal flow passage to sever a product lodged at an upstream side of said knife blades along a plane oriented generally perpendicular to said first direction.

5,191,824
METHOD AND APPARATUS FOR FORMING A CONTOURED SURFACE
Alan E. Rathbun, Jr., Kent, Ohio, assignor to Luxaire Cushion Co., Newton Falls, Ohio
Filed Dec. 4, 1991, Ser. No. 803,344
Int. Cl.[5] B26F *3/12*
U.S. Cl. 83—874 **21 Claims**



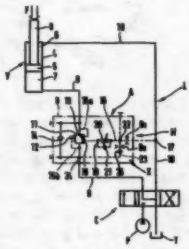
7. A method of forming a contoured surface with a compound curvature on a block comprising the steps of:
mounting the block to be contoured on a cradle having a translational direction and a rotational axis substantially parallel with the translational direction;
presenting a substantially linear cutting member substantially perpendicular to the translational direction and non-parallel with the rotational axis;
simultaneously effecting selective translation and rotation of the cradle relative to the cutting member; and,
cutting the block with the cutting member in response to the simultaneous relative translation and rotation to form a contoured surface on the block.

5,191,825
LOW-IMPACT AIR CYLINDER
David M. Beneteau, Amherstburg, and Mark J. Dolata, Windsor, both of Canada, assignors to Doben Limited, Windsor, Canada
Filed Jun. 12, 1992, Ser. No. 897,438
Int. Cl.[5] F01B *7/20, 7/00*
U.S. Cl. 91—173 **19 Claims**



12. A low-impact drive unit comprising wall means forming a pressure chamber and an annular working chamber, separator means separating said chambers, first passage means for supplying gas under pressure to a rear portion of said pressure chamber, a working piston in said working chamber and having a working piston rod extending out of said working chamber, said separator means having a central bore, an outer rear piston in said pressure chamber having a cylindrical recess and a second central bore therein, an inner rear piston located in said cylindrical recess and having a main rod extending through said bores and movable with said working piston rod, said main rod having a longitudinal passage, a rear hole communicating with said passage, and a front hole communicating with said passage, said outer rear piston having a central port through which gas under pressure is supplied to said cylindrical recess from said first passage means, and said outer rear piston having second passage means communicating with said second central bore.

5,191,826
HYDRAULIC CONTROL DEVICE
Rudolf Brunner, Baldham, Fed. Rep. of Germany, assignor to Hellmeier & Weinlein Fabrik Fur Oel-Hydraulik, Fed. Rep. of Germany
Filed Apr. 25, 1991, Ser. No. 691,239
Claims priority, application Fed. Rep. of Germany, Jul. 5, 1990, 4021347; European Pat. Off., Feb. 7, 1991, 91101694
Int. Cl.[5] F15B *11/08*
U.S. Cl. 91—418 **10 Claims**

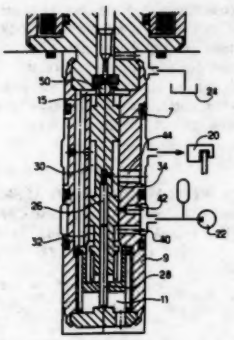


1. A hydraulic control device for an oscillating load moving system, comprising a double-acting hydroconsumer (V), which is adapted to be selectively connected to a pressure source (P) or to a reservoir (T) via two separate main lines (9, 10) and a control valve (C), and further comprising a load supporting valve (H), which is arranged in at least one of the main lines (9, 10) between the control valve (C) and the hydroconsumer (V) and adapted to be opened from another one of the main lines (9, 10) via a pilot line (16), characterized in that the pilot line (16) of the load supporting valve (H) has arranged therein a hydraulic damping device (X) for damping pressure fluctuations, which consists of a bypass line (23) branching off the pilot line (16) and provided with an interference throttle aperture (D2), and further characterized in that a throttle aperture (D1) is provided in the pilot line (16) between a branching point (22) of the bypass line (23) and main line (10).

5,191,827
ELECTRICALLY CONTROLLED PRESSURE-REGULATING SYSTEM FOR A HYDRAULIC CIRCUIT
Gilbert Kervagoret, Argenteuil, France, assignor to Bendix Europe Services Techniques, Drancy, France
Division of Ser. No. 674,472, Mar. 25, 1991, abandoned. This application Feb. 18, 1992, Ser. No. 837,576
Claims priority, application France, Apr. 12, 1990, 90 04701
Int. Cl.[5] F15B *13/044*
U.S. Cl. 91—433 **5 Claims**

1. A pressure-regulating system for a hydraulic circuit, comprising at least one generator of fluid under pressure, a hydraulic motor and a reservoir of fluid under low pressure and including a solenoid valve controlled by a computer and comprising an electrical coil and a sliding magnetic core controlling a slide which slides in a bore provided in a body, said slide defining two chambers arranged on either side of the slide in said bore, said slide comprising a hydraulic cell determining a reaction force opposing the force generated by said coil, said

cell being connected to one of said chambers as long as the solenoid valve is not energized, elastic means returning said slide and said core to a rest position, wherein said chambers are in connection with said source by means of a conduit when the



solenoid valve is not energized, and a normally closed valve being located between one of said chambers and the reservoir so as to isolate the hydraulic circuit under pressure from the reservoir when the solenoid valve is not energized.

5,191,828

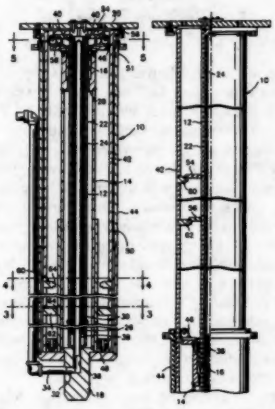
TELESCOPIC CYLINDER WITH INCREASED LATERAL LOADING CAPACITY

Robert B. McCreery, 524 N. Galloway St., Xenia, Ohio 45385

Filed Jun. 18, 1992, Ser. No. 900,297

Int. Cl.[5] F16J *15/18*

U.S. Cl. 92—165 R **12 Claims**



1. An upstanding telescopic cylinder with increased side loading capacity and including upper and lower ends, said cylinder including an elongated piston section and an elongated cylinder section, said sections being relatively extendable and retractable and telescopically engaged with said piston section projecting outwardly of the upper end of said cylinder section, said piston section including a first sleeve concentric therewith and loosely telescoped over said cylinder section from the upper end thereof, said cylinder section including a second sleeve telescoped over said first sleeve from the lower end of said first sleeve, said cylinder and piston sections including coacting sliding seal means sealing said piston section to said cylinder section, adjacent the upper end thereof, including first guide means guidingly engaged with the inner surface of said first sleeve, the lower end of said first sleeve including second guide means guidingly engaged with the exterior of said cylinder section, said second sleeve including third guide means adjacent the upper end thereof guidingly engaged with the exterior of said first sleeve, said piston section including at least one guide slidingly disposed thereon above the upper end of said cylinder section, gravity biased downwardly into engagement with stop means provided therefore on the upper end of said cylinder section and loosely received within said first sleeve, said first sleeve including internal abutment means thereon intermediate the upper end and lower ends thereof operative to engage and elevate said guide therewith during an intermediate portion of extension of said piston section relative to said cylinder section and, when engaged with said guide forming, a brace between said piston section and first sleeve preventing relative lateral displacement of the adjacent portions of said piston section and said first sleeve.

11. An upstanding telescopic cylinder including an elongated piston section and an elongated cylinder section, said sections being relatively extendable and retractable and telescopically engaged with said piston section projecting outwardly of the upper end of said cylinder section, said cylinder and piston sections including coacting sliding seal means sealing said piston section to said cylinder section, said piston section comprising a first tubular member telescoped downwardly into said cylinder section, said cylinder section including a second tubular member loosely telescoped upwardly into said first tubular member, open at its upper end and adapted at its lower end for connection with a fluid supply and discharge line, said piston section including a third tubular member concentric with and disposed within said first tubular member, including an open lower end and loosely telescoped downwardly over said second tubular member, the upper end of said third tubular member being closed, the lower end of said third tubular member being sealed relative to the lower end of said first tubular member, the upper end of said second tubular member having radial oil exhaust port means opening therethrough from the interior of said second member to the exterior of said second tubular member.

5,191,829

FAST COOKER OF SPAGHETTIS, BUCATINIS, AND THE LIKE

Giuseppe Caffarella, Milan, Italy, assignor to Spaghetti Express S.r.l., Milan, Italy

PCT No. PCT/EP89/00797, § 371 Date Apr. 19, 1991, § 102(e) Date Apr. 19, 1991, PCT Pub. No. WO90/04345, PCT Pub. Date May 3, 1990

PCT Filed Jul. 10, 1989, Ser. No. 671,779

Claims priority, application Italy, Oct. 21, 1988, 22395 A/88

Int. Cl.[5] A47J *27/14*; G07F *9/10*

U.S. Cl. 99—352 **10 Claims**

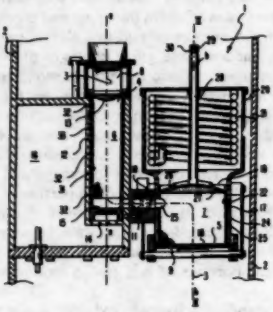
1. A fast cooker of metered amounts of a pasta product, comprising:

path means defining a path of travel (3) for a metered amount of a pasta product, said path of travel including an inlet opening (4) for receiving a metered amount of raw pasta product, a cooking chamber (6) communicating with the inlet opening, in which the metered amount of pasta product is cooked, a normalization chamber (7) communicating with the cooking chamber in which the metered amount of pasta is normalized after cooking, and an outlet opening (5) communicating with the normalization chamber for discharging the cooked and normalized metered amount of pasta from the path of travel;

cooking means connected to the path means for cooking pasta in the cooking chamber;

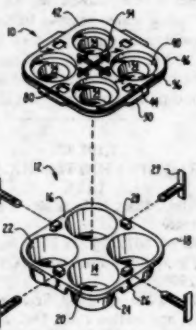
a first wire mesh (31) extending around the cooking chamber for receiving pasta in the cooking chamber;

normalization means connected to the path means for normalizing pasta in the normalization chamber; and



a second wire mesh (22) extending around said normalization chamber for receiving pasta in said normalization chamber.

5,191,830
BAKING APPARATUS FOR MAKING CUP-SHAPED COMESTIBLES
Fred M. Jacobson, 1978 Fairway Circle Dr., Lake San Marcos, Calif. 92069
Continuation of Ser. No. 578,397, Sep. 7, 1990, abandoned. This application Jun. 30, 1992, Ser. No. 908,482
Int. Cl.[5] A23P *1/00*
U.S. Cl. 99—439 **22 Claims**



1. An assembly of compatible trays for baking cup-shaped comestibles comprising:

a bottom receiving tray having a plurality of vessels interconnectably surrounded by a first planar support, said first planar support having a first rim downwardly extending perpendicular to, and along a perimeter of, said first planar support;

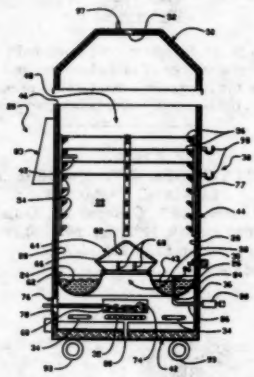
a top shaping tray having a plurality of mold caps compatibly aligned with the vessels of the receiving tray, said mold caps interconnectably surrounded by a second planar support, said second planar support having a second rim downwardly extending perpendicular to, and along a perimeter of, said second planar support, wherein the first rim and said second rim are slidably engaged when the top shaping tray is assembled with the bottom receiving tray;

a plurality of baking chambers having bottom and outer surfaces shaped by said bottom receiving tray, and top and inner surfaces shaped by said top shaping tray, when the top shaping tray is securely assembled atop the bottom receiving tray;

a plurality of raised arch eyelets each extending upwardly from the first planar support and a corresponding number of apertures in the second planar support for individually receiving each said eyelet, such that said eyelet has a portion extending above the second planar support; and

a plurality of locking rods, each of said locking rods having a first portion slidably engageable with one of said eyelets and a second portion at an angle relative to the first portion which can be placed in contact with an edge of the top tray when said trays are securely engaged, for locking the receiving tray to the shaping tray.

5,191,831
OVEN WITH WATER RING ASSEMBLY
Max W. Walden, 401 Porter St., Hanford, Calif. 93230
Filed Sep. 3, 1991, Ser. No. 753,963
Int. Cl.[5] A47J *27/00*
U.S. Cl. 99—446 **24 Claims**



1. An oven including a housing having a top, a bottom wall and a side wall extending between said top and said bottom wall which defines an interior volume formed for receipt and cooking of food therein, and heating means positioned proximate said bottom wall, the improvement comprising:

an annular trough positioned in said housing proximate said bottom wall between said top and said heating means and opening into said interior volume for communication of water vapor to food positioned in said interior volume for cooking, said trough having an outer trough perimeter dimensioned to extend and directly contact an inner perimeter surface of said side wall to be positioned for receipt of gravitating substances deposited on said side wall directly into said trough, and said trough being formed to receive and collect said substances and to retain a quantity of a liquid sufficient for humidification of food cooked in said interior volume of said oven; and

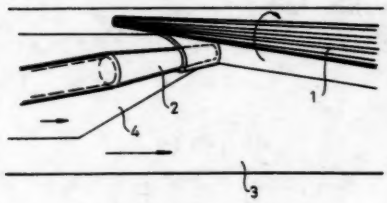
drainage means extending from said trough to an outside of said housing for removal of said substances and said liquid from said trough.

5,191,832
TUBULAR STUFFING APPARATUS
Shih C. Tsay, No. 62, Line 313, Wen Hsien Rd., Tainan, Taiwan
Filed Sep. 5, 1991, Ser. No. 755,051
Int. Cl.[5] A21C *9/06*
U.S. Cl. 99—450.6 **2 Claims**

1. A tubular stuffing apparatus comprising;

a roller shaped conic, provided with a plurality of longitudinal straight embossed lines, positioned to be only a little

above the surface of a conveying belt and to have its smaller end inclinedly pointing against the moving direction of the conveying belt which is moved by a power source, and picking and rolling up a corner of the beginning of a band dough sheet laid and moved forward on the conveying belt;



a stuff transporting tube having stuff contained in its hollow interior and able to be transported forward to go out of an end opening of the tube, and positioned ot have its end opening to be located at the point where the corner of the begining of the dough sheet is picked up by the roller; and

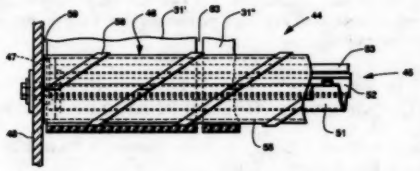
a conveying belt for a band dough sheet to lie on and be moved forward by a power source.

5,191,833

ROLL STRIPPING APPARATUS FOR ROUND BALER

James T. Clevenger, Jr., Lancaster, Pa., assignor to Ford New Holland, Inc., New Holland, Pa.

Filed Apr. 16, 1992, Ser. No. 868,935
Int. Cl.[5] B30B *5/06*; A01D *39/00*
U.S. Cl. 100—88 10 Claims



1. In a round baler having a frame, conveying means including rotatable transverse rolls mounted on said frame, said conveying means providing a series of inwardly facing moving surfaces that define a baling chamber for forming cylindrical bales of crop material, means for feeding crop material into said chamber, and scraper means mounted adjacent one of said rolls for preventing buildup of unwanted material on said roll, the improvement comprising:

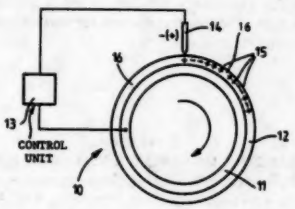
rigid strips affixed to and extending from the outer surface of said one roll along a path in the shape of a closed loop, said strips including a leading edge portion for engaging crop material randomly deposited on said roll and urging said crop material in a generally axial direction under conditions where said roll is rotated.

5,191,834

PRINTING SYSTEM WITH PRINTING FORM HAVING A FERRO-ELECTRIC LAYER

Hartmut Fuhrmann, Karlsfeld, and Alfred Hirt, Munich, both of Fed. Rep. of Germany, assignors to Man Roland Druckmaschinen AG, Offenbach am Main, Fed. Rep. of Germany

Continuation of Ser. No. 418,137, Oct. 6, 1989, abandoned. This application Oct. 29, 1990, Ser. No. 609,009
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1988, 335091
Int. Cl.[5] B41N *1/10*
U.S. Cl. 101—130 16 Claims



1. A method of printing comprising

providing a printing form support (11, 30) having thereon a particle transferring ferroelectric layer (12, 32);

selectively polarizing said ferroelectric layer (12, 32), point-by-point, in accordance with an image to be reproduced, in a selected direction of polarization to generate polarized domains of selected directions of polarization on said ferroelectric layer;

selectively electrically charging toner or ink particles with a polarity opposite the polarity of polarization of the respective points of the ferroelectric layer (12, 32); and

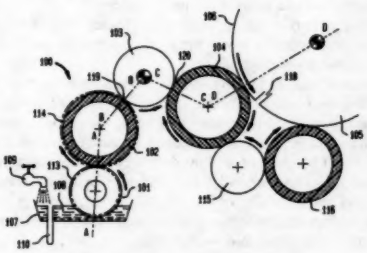
applying said charged toner or ink particles on said point-by-point polarized ferroelectric layer (12, 32) by attraction of the respective reversely charged toner or ink elements on selectively oppositely polarized domains of the ferroelectric layer.

5,191,835

FILM DAMPENING SYSTEM FOR A ROTARY OFFSET PRESS

Alain Blanchard, Chantilly, France, assignor to Heidelberg Harris GmbH, Heidelberg, Fed. Rep. of Germany

Filed Jun. 21, 1991, Ser. No. 720,221
Claims priority, application France, Jun. 21, 1990, 90 07769
Int. Cl.[5] B41L *25/16*
U.S. Cl. 101—148 18 Claims



1. A dampening system for a rotary press, comprising:

a pan roller rotatably driven by a first motor and including a hydrophilic covering and being at least partially immersed in a container of dampening solution;

a metering roller including an elastomeric covering for rotation in contact with the pan roller;

a dampening drum including a hydrophilic covering;

a dampening roller including an elastomeric covering for rotation in contact with the dampening drum and a plate cylinder of the press; and

means for selectively driving the dampening drum at a speed corresponding to the speed of the metering roller to establish inter-roller differential slipping between the dampening drum and the dampening roller, or at a speed corresponding to the speed of the plate cylinder to establish inter-roller differential slipping between the dampening drum and the metering roller, thus making it possible to use either of two different dampening modes, wherein the means for selectively driving includes a second motor coupled to the dampening drum for rotatably driving the dampening drum.

5,191,836

PRINTING UNIT FOR A ROTARY PRESS

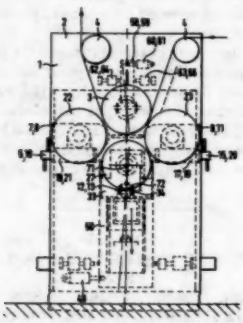
Anton Weis, Lorsch, Fed. Rep. of Germany, assignor to Albert-Frankenthal Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

Filed Apr. 9, 1992, Ser. No. 865,944

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1991, 4112925

Int. Cl.[5] B41F *13/24, 31/36*

U.S. Cl. 101—219 **5 Claims**



1. A printing unit in a rotary printing press capable of executing a flying plate change, said printing unit comprising:

first and second forme cylinders;

an impression cylinder engageable with a selected one of said first and second forme cylinders;

means to move said impression cylinder between first and second printing positions in contact with said first and second forme cylinders;

an ink forme roller engageable with a selected one of said first and second forme cylinders and having an axis of rotation, said ink forme roller being movable between said first and second printing positions about a swivel axis, said axis of rotation of said ink forme roller being intermediate said first and second forme cylinders and said swivel axis and parallel thereto;

an inking unit associated with said ink forme roller and movable about said swivel axis;

a swinging arm assembly supporting said ink forme roller and said inking unit, said swinging arm assembly being movable about said swivel axis; and

means to move said ink forme roller between said first and second printing positions in contact with said first and second forme cylinders by moving said swinging arm assembly about said swivel axis.

5,191,837

HAND STAMP WITH FOLDING HANDLE

John G. Bolton, Camberwell, Australia, assignor to Chusid Pty. Ltd., Australia

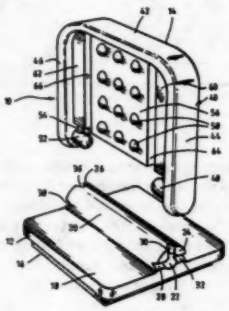
PCT No. PCT/AU89/00179, § 371 Date Jan. 3, 1991, § 102(e) Date Jan. 3, 1991, PCT Pub. No. WO89/10267, PCT Pub. Date Nov. 2, 1989

PCT Filed Apr. 24, 1989, Ser. No. 601,752

Claims priority, application Australia, Apr. 27, 1988, PI7984; Aug. 15, 1988, PI9859

Int. Cl.[5] B41K *1/54, 1/56*

U.S. Cl. 101—333 **5 Claims**



1. A stamp for applying a marking, including a handle and a base, said base forming or adapted to have secured to it an impression block for applying said marking, said handle being adapted to be manually gripped in order to effect the applying of said marking, said handle being adapted to be rotatable between an operational position in which said handle is located in a plane normal to that of said base and is generally upstanding relative to said base, and a transportation position in which said handle is located in a plane parallel to that of said base and generally adjacent to at least a portion of said base, said stamp being provided with means to firmly but releasably hold said handle in each of said operational position and said transportation position, said handle is provided with axle portions, and said means includes a bore associated with said base, said bore being adapted to cooperate with said axle portions located on said handle to permit rotation of said handle about said bore, said means further including elements being located in the vicinity of said bore and each of said axle portions releasably holding said handle in at least said operational position and said transportation position.

5,191,838

RAIL CLIP APPLICATOR AND METHOD OF APPLYING RAIL CLIPS

Kevin A. Hansen, Ludington, Mich., assignor to Pandrol Jackson, Inc., Ludington, Mich.

Filed Jun. 30, 1991, Ser. No. 709,640

Int. Cl.[5] E01B *29/24, 29/04*

U.S. Cl. 104—2 **57 Claims**

1. A rail clip applicator for inserting spring clips into tie shoulders of a railway track comprising:

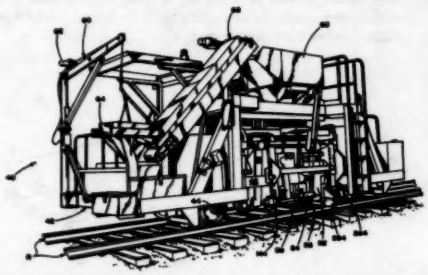
a first carrier frame adapted for rolling along a track rail in longitudinal alignment therewith;

an applicator assembly carried by said carrier frame and mounted for longitudinal movement with respect to said carrier frame;

clip magazine means carried by said applicator assembly for containing the clips and dispensing a series of clips at a lateral distance from the track rail;

a head assembly carried by said applicator assembly and mounted for vertical movement with respect to said applicator assembly;

clip shuttle means carried by said head assembly for receiving clips dispensed from said magazine means, for moving the clips received therein away from said magazine means toward the track rail, and for placing said clips adjacent the tie shoulders in position for insertion therein;



backup block means carried by said head assembly for pressing against the tie shoulders opposite the clips to be inserted;

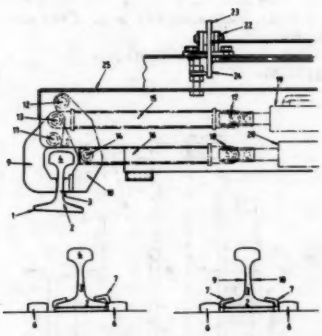
drive block means carried by said head assembly and mounted for longitudinal movement thereon for driving clips held in position by said clip shuttle means into said tie shoulders.

5,191,839

RAIL HANDLING APPARATUS

Hartley F. Young, West Melton, and Josef Nevidal, Wynn Vale, both of Australia, assignors to Pandrol Canada Limited, Montreal, Canada

Filed Jan. 28, 1992, Ser. No. 827,157
Claims priority, application Australia, Jan. 31, 1991, PK4386
Int. Cl.[5] B61H *13/00*
U.S. Cl. 104—2 **2 Claims**



1. A method of fitting rail insulators into proper positions at the foot of a railway rail having a foot-constituting bottom flange located between two rail fastener supporting shoulders, each of said insulators when in use having a portion located between the rail bottom flange and one of said shoulders and another portion overlying a proximate part of said bottom flange, said rail further having a head and a vertical web between said head and said bottom flange, comprising the steps of:

(a) prior to attaching railway clips to said fastener supporting shoulders, placing said rail insulators approximately at said proper positions; and

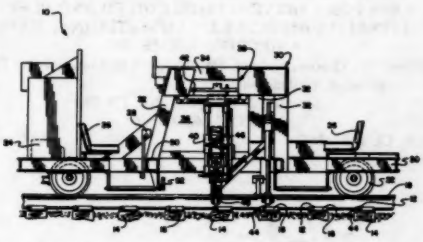
(b) applying a pulsating force alternately to the opposite sides of said rail web for moving the rail sufficiently relative to said fastener supporting shoulders to enable at least one of said insulators to be displaced into said proper position.

5,191,840

SPIKE DRIVING MACHINE HAVING PUSHING AND PERCUSSIVE SPIKE DRIVING FUNCTIONS

Dennis J. Cotic, and Jack K. Hosking, both of Waukesha, Wis., assignors to Oak Industries, Inc., Waltham, Mass.

Filed Sep. 11, 1991, Ser. No. 758,902
Int. Cl.[5] E01B *29/26*
U.S. Cl. 104—17.1 **26 Claims**



1. A machine for performing an operation on spikes of a railroad track having a plurality of ties, comprising:

a frame having a plurality of wheels for rotatably engaging the railroad track;

drive means for driving said frame along the track; and

spike driving means movably disposed relative to said frame for gripping spikes and driving gripped spikes into the ties, said spike driving means including spike pushing means for performing a spike pushing function and spike percussive means for performing a spike percussive function, said spike driving means being configured for driving the spike completely into the tie using selected application of said spike pushing function and said spike percussive function;

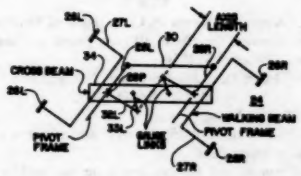
wherein said spike driving means is configured for performing one of said percussive function only, said pushing function only, and said pushing and percussive function only.

5,191,841

RAILROAD BOGIE AND RAIL GRINDER USING THE BOGIE

Michael B. Gilbert, Fairmount, Minn., assignor to Harsco Corporation, Wormleysburg, Pa.

Filed Feb. 18, 1992, Ser. No. 836,526
Int. Cl.[5] B61F *5/00*
U.S. Cl. 105—167 **21 Claims**



1. An apparatus comprising a first bogie for rails having: first and second opposite side pivot frames respectively pivotable about separate first and second vertical axes which are offset from a rail direction center line, first and second pairs of rail engagement wheels respectively supported by said first and second pivot frames, a first walking beam movably mounted to said first pivot frame via a mounting means for allowing the

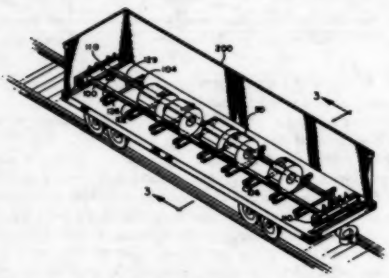
first walking beam to move transversely relative to said first pivot frame, said first walking beam having said first pair of rail engagement wheels mounted to said first walking beam, a first gauge maintainer operably connected to said first walking beam, and a tie member operably connected to said first and second pivot frames so as to cause said first and second pivot frames to pivot in unison at curved rail sections with said first gauge maintainer causing said first walking beam to move transversely relative to said first pivot frame such that the first bogie tends to be maintained in gauge.

5,191,842

MODULAR STRUCTURE FOR CONVERTING RAIL CARS FOR CARRYING BOTH COILED AND PLATE MATERIALS DIRECTLY ON LONGITUDINAL RAILS AND CROSS MEMBERS

Robert W. Tinkler, Colmar, Pa., assignor to Consolidated Rail Corporation, Philadelphia, Pa.

Filed Oct. 1, 1991, Ser. No. 770,980
Int. Cl.[5] B61D *3/16*
U.S. Cl. 105—355 **20 Claims**



1. Apparatus for transporting materials comprising: a cargo area and a conversion structure for retaining materials, the conversion structure disposed within the cargo area, the conversion structure comprising:

a pair of longitudinal extending rails for directly supporting and retaining materials, wherein the materials are in direct contact with the rails;

a plurality of cross members extending between the rails, the cross members also for retaining the materials, wherein the materials are in direct contact with the cross members; and

bulkhead means disposed laterally across the rails at ends thereof for preventing the materials from shifting longitudinally beyond the rails.

5,191,843

PALLET WITH MOLDED PLASTIC PALLET SPACER FEET

Timothy C. Ausavich; Kevin P. Gohr, both of Sheboygan, Wis., and Glyn Carver, Deerfield, Ill., assignors to Asaa Technologies, Inc., Sheboygan, Wis.

Filed Dec. 24, 1991, Ser. No. 813,081
Int. Cl.[5] B65D *19/12*
U.S. Cl. 108—56.3 **6 Claims**

1. A pallet having a platform, feet, and runners wherein the improvement comprises;

a. pallet spacer feet comprising a plastic molding having a substantially oblate spheroid plan shape and

b. said pallet spacer feet having a solid flat base and

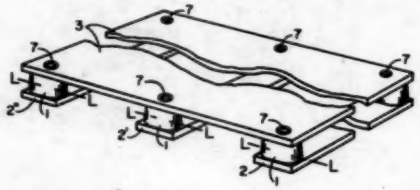
c. said pallet spacer feet having a top surface and a bottom surface, a central vertical section extending from said top surface to said bottom surface and a reinforcing web extending from said bottom of said spacer feet to one third to full height of said pallet spacer feet and

d. hollow substantially cylindrical segments extending from said top to said bottom adjoining to and on each side of said central vertical section of said pallet spacer feet and

e. said reinforcing web spanning a portion of said substantially cylindrical segments of said pallet spacer feet and

f. said pallet spacer feet attached to said platform and extending to a pallet spacer foot runner and

g. said pallet spacer feet having a long axis of said pallet spacer feet mounted at right angles to a long axis of said pallet spacer feet runner and,



h. fastening of said pallet spacer feet to said platform and said pallet spacer foot runner by means of a through bolt extending from said pallet platform, through said pallet spacer foot and through said pallet spacer foot runner and

i. a threaded nut attached to said through bolt and

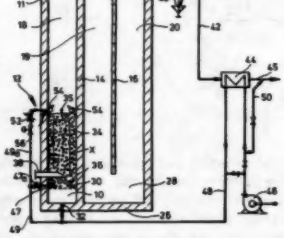
j. nails extending upward through said pallet spacer foot runner and through the bottom of said pallet spacer foot and into each of said substantially cylindrical segments of each of said pallet spacer feet.

5,191,844

PROCESS AND APPARATUS FOR THE TREATMENT OF DUST OR LIKE MATERIAL WHICH IS CAPABLE OF TRICKLE FLOW

Hans-Joachim Scheel, Niederfischbach, Fed. Rep. of Germany, assignor to Alb. Klein GmbH & Co. KG, Niederfischbach, Fed. Rep. of Germany

Filed Jan. 16, 1992, Ser. No. 821,794
Claims priority, application Fed. Rep. of Germany, Jan. 25, 1991, 4102168
Int. Cl.[5] F23G *5/00*
U.S. Cl. 110—346 **14 Claims**

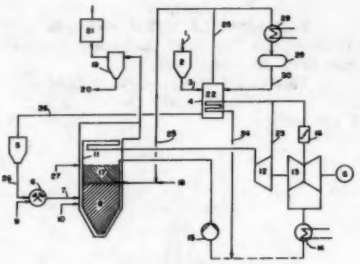


1. A process for the treatment of dust or the like which contains organic constituents, in particular filter dust from foundry sands containing binding agent, whereby the dust is introduced into a furnace and heated and burnt therein in the presence of a fluidisable heat carrier of refractory material, the improvement comprising: passing a first air flow through the heat carrier material at a flow rate sufficient to combust the organic constituents in the dust; and pulsing a second air flow through the heat carrier material at an intensity sufficient to circulate the heat carrier within the furnace.

5,191,845
METHOD OF REPROCESSING SEWAGE SLUDGE

Heinz Spliethoff, Friedrichsthal, Fed. Rep. of Germany, assignor to Saarbergwerke Aktiengesellschaft, Saarbrucken, Fed. Rep. of Germany

PCT No. PCT/DE90/00175, § 371 Date Aug. 22, 1991, § 102(e) Date Aug. 22, 1991, PCT Pub. No. WO90/12249, PCT Pub. Date Oct. 18, 1990
PCT Filed Mar. 9, 1990, Ser. No. 743,325
Int. Cl.[5] F23G *5/00, 7/00*
U.S. Cl. 110—346 10 Claims



1. A process for reprocessing sewage sludge using a fossil-fuel power plant comprising:

initially drying the sewage sludge in indirect heat exchange with condensed steam from a steam generator of the power plant;

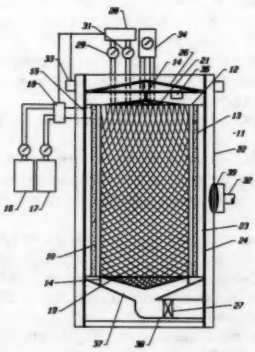
supplying exhaust vapors produced during the drying process into a reduction zone of a combustion chamber of the power plant for reducing nitric oxides and other toxic substances;

supplying the dried sewage sludge to a furnace zone of the combustion chamber of the power plant for burning the sewage sludge and thereby producing ash and exhaust gases.

5,191,846
SELF-CONTAINED HOUSEHOLD GARBAGE INCINERATOR

Haile S. Clay, P.O. Box 326, La Honda, Calif. 94020

Filed Feb. 3, 1992, Ser. No. 829,421
Int. Cl.[5] F23G *5/00*
U.S. Cl. 110—346 13 Claims



1. A self-contained incinerator apparatus for burning refuse, comprising:

a chamber for containing refuse;

a porous membrane at least partially enclosing said chamber;

an air-tight housing enclosing said porous membrane and said chamber;

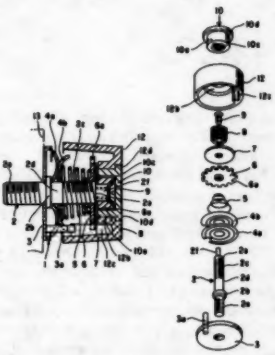
fuel means for supplying fuel to said porous membrane; and

surface combustion means at the surface of said porous membrane facing said chamber for burning refuse contained in said chamber by surface combustion.

5,191,847
TENSION REGULATING DEVICE

Shinji Kojima, and Makoto Kamewada, both of Tochigi, Japan, assignors to The Singer Company N.V., Edison, N.J.

Filed Mar. 2, 1992, Ser. No. 844,095
Claims priority, application Japan, Apr. 16, 1991, 3-33842
Int. Cl.[5] D05B *47/02;* B65H *59/22*
U.S. Cl. 112—254 2 Claims



1. A tension regulating device adapted to be secured to the frame of a sewing machine and comprising:

a tension regulating shaft having a screwed rod portion extending from one end, a shaft portion extending from the other end and a collar portion disposed between the rod portion and the shaft portion, the shaft portion having a male screw section terminating in a reduced shoulder and a front hollow cylindrical section extending from the shoulder, the rod portion being secured to the frame;

a collar secured to the collar portion;

first and second tension discs, the first disc being disposed on the collar portion and engaging the collar, the second disc being disposed on the collar portion and engaging the one side of the collar, the discs being adapted to receive a sewing machine thread therebetween;

a compression spring disposed on the male screw portion with one end of the spring bearing against the second disc;

a regulating nut engaging the male screw portion and bearing against the other end of the spring to adjust the compression of the spring;

a regulating dial stop disposed on the male screw portion and bearing against the shoulder of the regulating shaft;

a regulating dial having scales, the dial being disposed on the male screw portion and bearing against the dial stop, said dial engaging the nut so that rotation of the dial rotates the nut;

a short cylindrical member secured in the front hollow cylindrical section of the regulating shaft for clamping the dial stop, the member having spline grooves at the outer periphery thereof; and

a cap having an indicating needle corresponding to one of the scales of the dial and engaging the spline grooves of the member to rotatably clamp the dial between the cap and the dial stop.

5,191,848

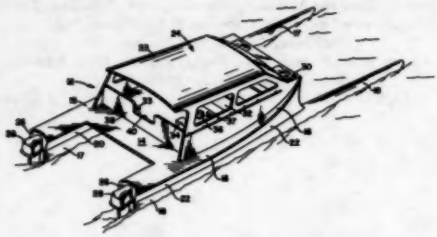
MULTIHULL VESSELS, INCLUDING CATAMARANS, WITH WAVE PIERCING HULL CONFIGURATION

Roger C. Hatfield, St. Croix, V.I., assignor to Gold Coast Yachts, Inc., St. Croix, V.I.

Continuation-in-part of Ser. No. 804,924, Dec. 11, 1991, abandoned. This application Sep. 17, 1992, Ser. No. 946,156

Int. Cl.[5] B63D *1/06, 1/08, 1/12*

U.S. Cl. 114—56 **20 Claims**



1. An ocean going vessel comprising: at least a pair of laterally spaced apart parallel long thin hulls, a connecting means, including stilt means connected to each hull, connecting said spaced apart hulls and means for driving said vessel through the water; at least one of said hulls comprising: a buoyant, sealed and watertight wave piercing hull configuration, with the length to beam ratio of said hull being within the range of from about 12:1 to about 30:1; said hull having a prow which is substantially knife-edged and vertical; the vertical section contours of the forward ⅓ to ½ portion of the length of the hull are of progressively varying elliptical shape from said prow and have a height to width ratio which averages essentially 2:1 between the prow and the rearward section of the elliptical portion of the hull; and the sections of the rearward portion of the hull are shaped to transition from the rearmost elliptical section of the forward portion of the hull to a substantially polygonal section contour adjacent the stern of said hull.

5,191,849

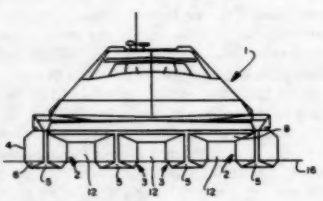
MULTI-HULLED BOAT

Mark Labrucherie, 105 ru du Champ de Mont, Varanval 60880 le Meux, France, and Daniel Tollet, Regence Park, Apartment 313, Avenue Jean Moulin, 83400 Hyeres, France

Filed May 6, 1991, Ser. No. 695,822

Int. Cl.[5] B63B *1/12*

U.S. Cl. 114—61 **3 Claims**



1. A multi-hull boat comprising:

a superstructure having a boat bottom,

a pair of outside hulls parallel to each other and attached at said bottom,

at least one inside hull attached at said bottom parallel to and disposed between said outside hulls,

each said outside hull having a hull extension on said front end whereby said outside hulls extend forward of said at least one inside hull,

said inside and outside hulls each having a continuously increasing cross-sectional area from said front end to said rear end,

each hull having a substantially flat hull bottom sloping upwardly from rear to front at an angle between 0.5° and 5° from the horizontal.

5,191,850

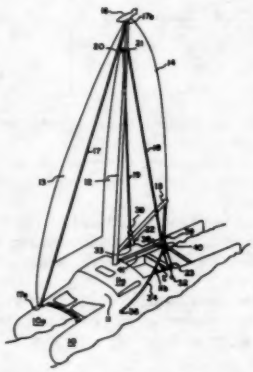
SAIL BOAT RIGHTING SYSTEM

Jan C. Gougeon, Bay City, Mich., assignor to Gougeon Manufacturing Corp., Bay City, Mich.

Filed Oct. 7, 1991, Ser. No. 772,146

Int. Cl.[5] B63B *15/00*

U.S. Cl. 114—91 **12 Claims**



1. A relatively large, multi-hulled sailing vessel having a bow and stern, which is easily self-righted without outside assistance comprising:

a. at least first and second parallel hulls joined by a connecting boat portion;

b. a floatable mast with a lower end tiltably laterally centrally mounted on said connecting boat portion;

c. an aft stay system including a pair of mast supporting aft stay cables connected to the mast at their upper ends and to the vessel at their lower ends on opposite sides of the vessel aft of the mast to normally tend to prevent forward and lateral tipping of the mast;

d. a stay cable system connected to the mast and connected also to the bow of the vessel to tend to normally prevent rearward tipping of the mast;

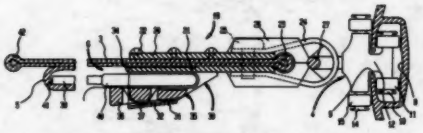
e. a boom for the mast for a sail assembled to the boom and mast;

f. a generally compression load bearing pole swivelly connectable to the vessel at the mast and extending to releasably connect to one of said aft stay cables and hold it out away from said mast;

g. a righting line connectable to said one of said aft stay cables near the connection of the pole to said one of said aft stay cables and connectable to the side of the vessel forwardly of the connection of said one aft stay cable to said vessel; and

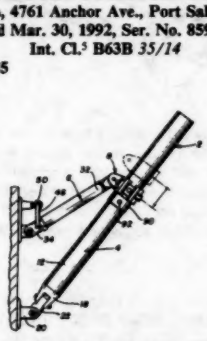
h. a mechanical advantage exerting tackle system connectable to said other of said aft stay cables and to said vessel for effectively tautening the said other aft stay cable and imposing a load on said one aft stay cable which is transmitted in part to said righting line.

5,191,851
ARRANGEMENT FOR SAILS
Göran Rutgerson, Marstrand, Sweden, assignor to Rutgerson Marin AB, Sweden
PCT No. PCT/SE88/00556, § 371 Date Apr. 2, 1991, § 102(e) Date Apr. 2, 1991, PCT Pub. No. WO90/04539, PCT Pub. Date May 3, 1990
PCT Filed Oct. 21, 1988, Ser. No. 674,352
Int. Cl.[5] B63H *9/08*
U.S. Cl. 114—102 7 Claims



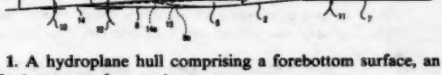
1. Apparatus for supporting a sail including batten means on a mast comprising track slide means moveably slideable along said mast, fitting means for coupling said track slide means to said sail and for securing said batten means in a predetermined position on said sail, said fitting means including first eye means having an outer surface, said first eye means being affixed to said track slide means, and second eye means affixed to said fitting means, said first and second eye means being interlocking, said second eye means including a support surface having a predetermined configuration corresponding to said outer surface of said first eye means, whereby when said sail is urged in a first direction away from said mast, said first and second eye means engage each other so as to provide for mutual freedom of movement therebetween, and when said sail is urged in a second direction towards said mast said support surface of said second eye means engages said outer surface of said first eye means so as to limit lateral displacement therebetween.

5,191,852
FISHING BOAT OUTRIGGER DEVICES
Herbert E. Rupp, 4761 Anchor Ave., Port Salerno, Fla. 33692
Filed Mar. 30, 1992, Ser. No. 859,851
Int. Cl.[5] B63B *35/14*
U.S. Cl. 114—255 3 Claims



1. An outrigger device for use with a motorboat having an upwardly extending wall upon which said device can be mounted for movement between an inboard storage position and an outbourd trolling position, said device comprising:
a tube unit, a position unit moveable relative to said tube unit and a lock unit to releasably prevent said relative movement,
said tube unit including:
an elongated tube defined by a an inboard end portion and an outboard end portion integrally joined together by a straight central portion,
a first shackle member fixed to said inboard end portion,
a first bracket member for mounting on said wall, and
a universal joint mounting said shackle member on said first bracket member,
said position unit including:
a V-shaped yoke defined by first and second end portions integrally joined together by an arcuate central portion,
clevis members fixed to said first and second end portions,
second and third bracket members upon which said clevis members are pivoted, said second bracket member including latch means to engage said first end portion to lock said device in said inboard storage position, and
said lock unit including:
a collar defined by first and second U-shaped straps hinged together at one of their ends and having tongues extending from the other of their ends,
said elongated tube of said tube unit extending through said collar for sliding movement of said collar along said elongated tube,
said first strap carrying a laterally extending second shackle,
a lug having a bore therein fixed to said arcuate central portion of said yoke,
a pin extending through said bore and said second shackle to releasably fasten said lock unit to said position unit,
said tongues having transverse bores therein through which a bolt extends, and
a cam member carried by said bolt having a lever extending therefrom by which said cam member may be moved between a lock position which prevents said collar sliding movement and an unlock position which permits said collar sliding movement.

5,191,853
STEPPED HYDROPLANE HULL
Alan J. Adler, 752 La Para Ave., Palo Alto, Calif. 94306
Filed May 24, 1991, Ser. No. 705,240
Int. Cl.[5] B63B *1/20*
U.S. Cl. 114—291 6 Claims



1. A hydroplane hull comprising a forebottom surface, an afterbottom surface, and a step;
said forebottom and afterbottom surfaces connected by said step which comprises an abrupt upward transition from said forebottom surface to said afterbottom surface such that water flow will separate from the hull bottom surface immediately aft of said step,
said forebottom surface aligned with a positive trim angle relative to the horizontal water flow so as to provide hydrodynamic lift in said flow,
an aft portion of said afterbottom surface formed with a positive trim angle relative to the water flow so as to provide lift when said separated water flow re-contacts said aft portion of said afterbottom surface,
a forward portion of said afterbottom surface formed with a non-negative trim angle which is less than said trim angle of said aft portion of said afterbottom surface,
said aft portion of said afterbottom surface formed with a trim angle which is 0.25 to 1 degree less than said trim angle of said forebottom surface,
an abrupt angular transition of trim angle between said forward and aft portions of said afterbottom surface.

5,191,854

BOAT

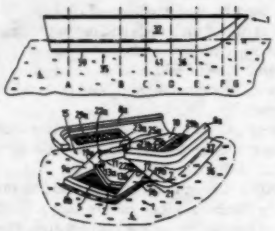
Hans-Rudolf Lehmann, Solothurn, and Marcel Lehmann, Balmweid 45, 4525 Balm B. Günsberg, both of Switzerland, assignors to Marcel Lehmann, Balm B. Günsber, Switzerland

Filed Jan. 7, 1991, Ser. No. 638,327

Claims priority, application Switzerland, Jan. 18, 1990, 00134/90; Jul. 13, 1990, 02355/90

Int. Cl.[5] B63B *1/04*

U.S. Cl. 114—291 11 Claims



1. A boat with a stern and a bow comprising,

a portside and a starboard boat side with an inner and an outer wall adjacent to the interior and exterior of the boat respectively,

a bow opening (15) in said bow extending from the interior to the exterior of the boat, a bow outer wall portion underneath said bow opening (15), a flap (1) closing said bow opening (15) and forming part of said bow, means connected to move said flap (1) between a closed position closing said bow opening (15) and an open position pivoted out of said bow opening (15) in a direction exterior of the boat,

said flap (1) having an inner and an outer wall, and a bottom edge portion,

two bow side parts adjacent said bow opening (15) at said portside and said starboard boat side respectively having an inner and an outer wall,

said outer wall of said flap (1) having a V-shaped contour,

said outer walls of said two bow side parts and said outer wall of said flap (1), when said bow opening (15) is closed by said flap (1), forming a V-shaped bow,

said means connected to move said flap (1) including at least one projection (9*a*, 9*b*) extending from said flap (1) into said interior of the boat,

at least one swivel joint means (13*a*, 13*b*) set back into said interior of said boat relative to said inner wall of said flap (1), connecting said projection (9*a*, 9*b*) to the inner wall of the boat, and

said swivel joint means (13*a*, 13*b*) and projection (9*a*, 9*b*) positioned so that when moving said flap (1) from the closed positioned to the open position to open said bow opening (15), said bottom edge portion of said flap (1) is moveable partly underneath said bow opening (15) forming an open space (2) between said bottom edge portion of said flap (1) lying underneath said bow opening (15) and said outer bow wall portion underneath said bow opening (15).

5,191,855

BATTERY MISSING INDICATOR

Fred J. Conforti, Wheaton, Ill., assignor to Pittway Corporation, Aurora, Ill.

Filed Feb. 26, 1990, Ser. No. 485,221

Int. Cl.[5] G01D *13/00*; H01M *2/10*

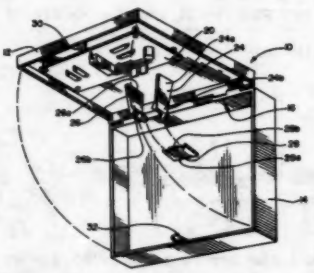
U.S. Cl. 116—280 2 Claims

1. An apparatus for inhibiting latching of a cover to a base of a battery powered unit in the absence of a battery comprising:

a base;

a cover;

first and second spaced apart, substantially identical, deflectable, non-latching, elongated battery retaining members biased toward one another and carried on one of said base or said cover, said members each having a free, battery retaining end wherein said ends are deflectable away from one another in response to the presence of the battery;



a blocking flange carried on the other of said base or said cover, wherein said flange engages at least one of said ends in the absence of the battery thereby inhibiting latching of said cover to said base; and

a latch mechanism carried at least in part on one of said base or cover displaced from said members.

5,191,856

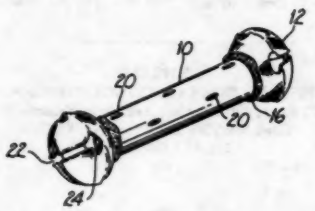
ANIMAL TOY

Richard Gordon, 95 W. 3rd St., Freeport, N.Y. 11520

Filed Aug. 18, 1992, Ser. No. 931,832

Int. Cl.[5] A01K *15/00*

U.S. Cl. 119—29.5 7 Claims



1. An animal toy comprising a hollow tube, a closure at each end of said tube, and spring means located within said tube to normally tension said closure into abutment with the ends of said tube, and a quantity of scented material is housed in said tube and the tension on said closures is such as to permit the escape of said material scent and prevent the escape of the material.

5,191,857

ELECTRONIC BIRD FEEDER AND BAFFLE

John M. D. Boaz, 14222 Rock Canyon Dr., Centreville, Va. 22020

Continuation-in-part of Ser. No. 748,546, Aug. 22, 1991, Pat. No. 5,150,665, which is a continuation-in-part of Ser. No. 594,626, Oct. 9, 1990, abandoned. This application Jun. 8, 1992, Ser. No. 894,913

Int. Cl.[5] A01K *5/00*

U.S. Cl. 119—52.3 14 Claims

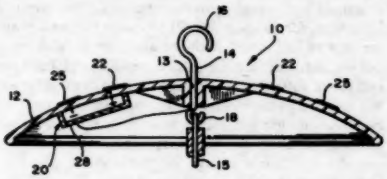
1. An electrical shock baffle for use with bird feeders comprising:

a baffle;

an attachment means for suspending the baffle; and

an open electronic circuit means for producing an electrical shock interconnected between a conductive portion of

said baffle and a conductive portion of said attachment means whereby one of said conductive portions forms a positive contact and the other of said conductive portions



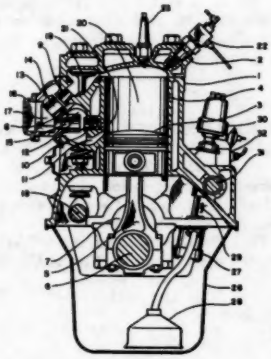
forms a negative contact so that an electrical shock will result when both said positive and negative contacts are simultaneously engaged.

5,191,858

DUAL CYCLE ENGINE

Edward M. McWhorter, 6931 Greenbrook Cir., Citrus Heights, Calif. 95621

Filed Jul. 20, 1992, Ser. No. 916,394
Int. Cl.[5] F02B *35/10*
U.S. Cl. 123—21 **7 Claims**



1. In a reciprocating piston driven internal combustion engine, an air-chest manifold, said air-chest manifold comprising an upper cylinder ejector nozzle fixedly attached to said air-chest manifold and in communication with an upper cylinder port, a side-port ejector nozzle fixedly attached to said air-chest manifold in line with and in communication with a cylinder wall side-port, a lower cylinder wall side-port, an air inlet to said air-chest manifold, an exhaust gas manifold, said exhaust gas manifold comprising an upper cylinder diffuser, said upper cylinder diffuser fixedly mounted in said exhaust gas manifold and aligned with said upper cylinder ejector nozzle, a side-port diffuser fixedly mounted in said exhaust gas manifold and aligned with said side-port ejector nozzle, an exhaust outlet in said exhaust gas manifold.

5,191,859

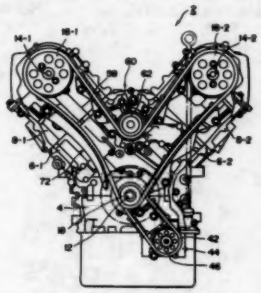
WATER PUMPING APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Hideo Fujiwara, Shizuoka, Japan, assignor to Suzuki Motor Corporation, Shizuoka, Japan

Filed Feb. 12, 1992, Ser. No. 835,183
Claims priority, application Japan, Feb. 22, 1991, 3-050761
Int. Cl.[5] F01P *5/10*
U.S. Cl. 123—41.44 **2 Claims**

1. A water pumping apparatus for an internal combustion engine having a cylinder block with first and second cylinder banks in a V-configuration wherein a cam shaft and a crank shaft are drivingly connected by a timing chain, comprising:

a water pump having a water pump sprocket disposed coextensively with said timing chain to allow said timing chain to drive said water pump; and



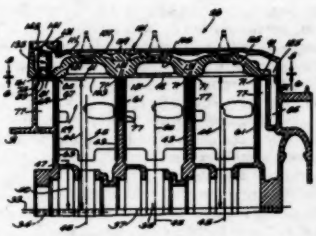
said water pump being provided at the end face of the cylinder block between said cylinder banks over said crank shaft within a timing chain cover enclosing said timing chain.

5,191,860

MARINE PROPULSION DEVICE WITH CLOSED DECK CYLINDER BLOCK CONSTRUCTION

George L. Broughton, Zion, Ill., and Paul W. Breckenfeld, Kenosha, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Division of Ser. No. 583,008, Sep. 14, 1990, Pat. No. 5,048,468, which is a continuation of Ser. No. 509,609, Apr. 16, 1990, abandoned. This application Jul. 24, 1991, Ser. No. 734,896
The portion of the term of this patent subsequent to Sep. 17, 2008, has been disclaimed.
Int. Cl.[5] F02B *75/18*
U.S. Cl. 123—41.74 **1 Claim**



1. An engine comprising a closed deck cylinder block including a cylinder bore having an outer end, a counter bore at said outer end of said cylinder bore, and an outer wall including an outer cylinder head mounting surface extending from said counter bore, a cylinder liner received in said cylinder bore and defining, with said counter bore, an annular groove in said cylinder head mounting surface, a cylinder head including a cylinder block mounting surface engaged with said cylinder head mounting surface of said cylinder block, a seal member located in said annular groove and engaged with said cylinder block and said cylinder head, and a plurality of fasteners extending between and tightly securing together said cylinder block and said cylinder head.

5,191,861

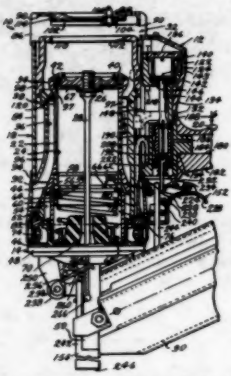
INTERNAL COMBUSTION ACTUATED PORTABLE TOOL

Rudolph J. Kellerman, North Kingstown; Arthur E. Perra, Hope Valley; Leo E. La Barre, West Warwick, and Walter G. Lemos, North Smithfield, all of R.I., assignors to Stanley-Bostitch, Inc., East Greenwich, R.I.

Filed Jul. 12, 1991, Ser. No. 729,194

Int. Cl.[5] F02B *75/04, 21/04, 71/04;* B25C *1/08*

U.S. Cl. 123—46 SC **69 Claims**



1. An internal combustion actuated portable tool comprising

a housing assembly including a workpiece engaging portion having means defining a fastener drive track therein, a main body portion above said workpiece engaging portion defining an acceptable housing profile and having means defining a cylindrical drive chamber therein and a handle portion extending transversely from said main body portion for enabling a user to manually move the housing assembly in portable fashion,

a drive piston slidably sealingly mounted in said cylindrical drive chamber for movement through repetitive cycles each of which includes a drive stroke and a return stroke,

a fastener driving element operatively connected with said piston and mounted in said fastener drive track for movement therein through a drive stroke in response to the drive stroke of said piston and a return stroke in response to the return stroke of said piston,

magazine means carried by said housing assembly for containing a supply of fasteners and feeding successive leading fasteners of the supply into said fastener drive track to be driven therefrom by said fastener driving element during the drive stroke thereof,

combustion chamber means above said drive chamber within the acceptable profile defining portion of said housing assembly communicating with an upper open end of said drive chamber,

an annular mixing chamber within said housing assembly in surrounding relation with said cylindrical drive chamber below said combustion chamber means,

fresh air inlet means communicating with a lower portion of said mixing chamber within said housing assembly,

main valve means movable between (1) an open position wherein said combustion chamber means is open at a position of communication with an upper portion of said annular mixing chamber and at a spaced position of communication with the atmosphere and (2) a closed position wherein said combustion chamber means is closed from communication with said mixing chamber and the atmosphere,

gaseous fuel chamber means within said housing assembly,

a series of annular spaced nozzles operable when a predetermined charge of gaseous fuel under pressure from said gaseous fuel chamber means is communicated therewith to direct said charge into said annular mixing chamber in jet stream formations with said combustion chamber means open so that the jet stream formations are operable (1) to cause fresh air from said fresh air inlet means to be entrained and mixed with the charge of fuel forming the jet stream formations and (2) to cause the jet stream formations of fuel mixed with entrained air to flow from said mixing chamber into the open combustion chamber means and move sufficient residual gas in said combustion chamber means therethrough and into the atmosphere to fill the combustion chamber means with a charge of combustible gases in the form of an air-fuel mixture,

means for igniting a charge of combustible gases in said combustion chamber means, and

means operable in response to a predetermined manual actuating procedure for (1) causing a predetermined charge of gaseous fuel under pressure within said gaseous fuel chamber means supplied thereto from a source of fuel under pressure to be communicated with said series of nozzles so as to fill said combustion chamber means with a charge of combustible gases, (2) causing said main valve means to move from said open position into said closed position in timed relation to the filling of the combustion chamber means with the charge of combustible gases, and (3) causing said igniting means to ignite the charge of combustible gases in said combustion chamber means while the charge is at generally atmospheric pressure so as to create pressure conditions in said combustion chamber means in communication with said drive chamber sufficient to drive said drive piston and said fastener driving element through a drive stroke.

5,191,862

RECIPROCATING PISTON WITH VARIABLE COMPRESSION HEIGHT FOR INTERNAL COMBUSTION ENGINES

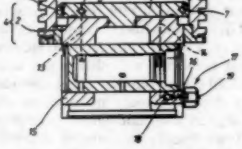
Friedrich Wirbeleit, Esslingen-Rüdern, and Martin Bechtold, Stuttgart, both of Fed. Rep. of Germany, assignors to Daimler-Benz AG, Fed. Rep. of Germany

Filed May 26, 1992, Ser. No. 887,811

Claims priority, application Fed. Rep. of Germany, May 25, 1991, 4117131

Int. Cl.[5] F01B *31/14*

U.S. Cl. 123—48 B **9 Claims**



1. Reciprocating piston arrangement with variable compression height, for internal combustion engines in particular, comprising:

a connecting rod,

an inner piston part hinged on the connecting rod,

an outer piston part guided on the inner piston part so that it can be displaced axially,

a control chamber located between a surface of the inner piston part and a surface of the outer piston part facing towards a piston end, to which control chamber are connected a first oil hole in the inner piston part for oil supply and a second oil hole for removal of oil from the control chamber to an engine crank case,

a pressure limiting valve in the second oil hole which opens

in the direction of the crank case and which has a valve body loaded by a closing spring, and

a temperature responsive element provided within the extent of the second oil hole which permits a higher oil pressure in the control chamber when the engine is cold than when it is warm and which operates as a function of temperature,

wherein the temperature response element is formed by a spring consisting of a shape memory alloy, which spring interacts with the pressure limiting valve.

5,191,863

ROTARY SLEEVE-VALVE INTERNAL COMBUSTION ENGINE

Akira Hagiwara, Sagamihara, Japan, assignor to Oshima Construction Co., Ltd., Kanagawa, Japan

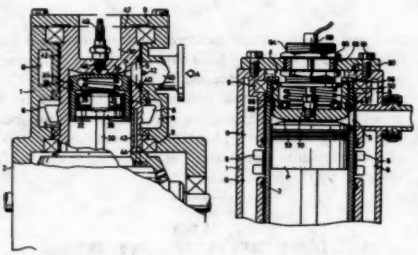
PCT No. PCT/JP89/01211, § 371 Date Sep. 17, 1991, § 102(e) Date Sep. 17, 1991, PCT Pub. No. WO90/11432, PCT Pub. Date Apr. 10, 1990

PCT Filed Dec. 1, 1989, Ser. No. 761,750

Claims priority, application Japan, Mar. 24, 1989, 1-70394; May 17, 1989, 1-121485; Aug. 29, 1989, 1-220314

Int. Cl.[5] F02B *75/20*

U.S. Cl. 123—59 AC **13 Claims**



1. A rotary sleeve-valve internal combustion engine comprising:

a. an engine block (1)

b. an inlet port (10) provided in said engine block (1) to suck in a fuel mixture;

c. an exhaust port (15) provided in said engine block (1) to discharge the fuel mixture;

d. a cylindrical rotary cylinder valve (3) rotatably supported by at least one bearing (9) in said engine block (1), said valve (3) being hermetically sealed at one end thereof and opened at the other end and having a cylindrical space therein;

e. an opening (5) provided in the outer peripheral side wall surface of said rotary cylinder valve (3) to communicate with said inlet port (10) during admission and with said exhaust port (15) during exhaust;

f. a gear (4) provided on said offer end of said rotary cylinder valve (3);

g. a piston (P) slidably fitted in said cylindrical space in said rotary cylinder valve (3);

h. a crankshaft (20) connected to said piston (P) through a connecting rod (30);

i. a crank gear (26) provided on said crankshaft (20) to be in mesh with said gear (4);

j. an annular seal ring (40) disposed around said opening (5), said seal ring (40) being pushed by centrifugal force produced by the rotation of said rotary cylinder valve (3) in come in contact with the inner peripheral wall surface (7) of said engine block (1) in order to effect gas seal for said inlet port (10) and said exhaust port (15); and

k. a cylinder head (47) formed at said one end of said rotary cylinder valve (3) as an integral part of it for gas seal.

5,191,864

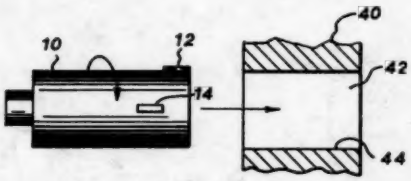
ENGINE CYLINDER BORE

John Santi, West Allis, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed Feb. 3, 1992, Ser. No. 829,710

Int. Cl.[5] F02F *1/00*

U.S. Cl. 123—193.2 **5 Claims**



1. In an improved internal combustion engine having an engine housing, a mechanical cylinder bore formed within said housing, a piston that is reciprocable within and contacting said bore, and a rotatable crankshaft interconnected with said piston, the improvement comprising:

a bore surface of said cylinder bore, said bore surface being substantially free of visible tool marks and being substantially free of compressive state material.

5,191,865

ENGINE IDLE CONTROL SYSTEM FOR VEHICLE

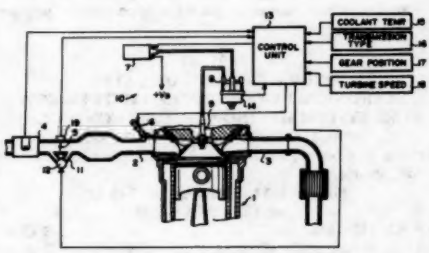
Kunitomo Minamitani; Hiromo Yoshioka, and Shigeaki Kakizaki, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Sep. 23, 1991, Ser. No. 763,599

Claims priority, application Japan, Sep. 27, 1990, 2-255355

Int. Cl.[5] F02D *41/16*

U.S. Cl. 123—339 **4 Claims**



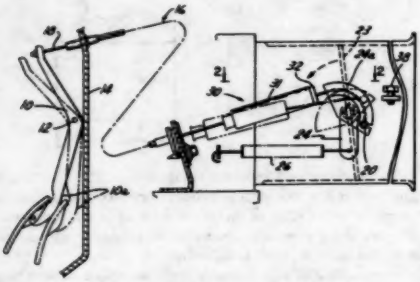
1. An engine idle control system for a vehicle which causes the engine speed to converge on a target idling speed by a feedback control when the engine idles characterized in that said control system is provided with an engine speed sensor and a means for detecting whether the engine is revolving by itself or is being driven by the vehicle, and controls the engine speed by a proportional feedback control on the basis of the difference between an actual engine speed and the target idling speed when the engine is being driven by the vehicle while controlling the engine speed by a control at least a part of which is an integral feedback control when the engine is revolving by itself.

5,191,866

THROTTLE CONTROL SYSTEM FOR AUTOMOTIVE VEHICLE

Thomas M. Tosdale, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jun. 1, 1992, Ser. No. 891,115
Int. Cl.[5] F02D 7/00
U.S. Cl. 123—400 **8 Claims**



1. A throttle control system for an automotive vehicle, comprising:

an accelerator pedal;

a rotatable throttle shaft having a crank means and a throttle device affixed thereto, with said shaft being rotatable from an idle position to a wide open throttle position;

a first spring means for biasing said crank means to an idle position;

stop means for engaging said crank means and for preventing further opening of the throttle device when the throttle shaft has reached the wide open throttle position; and

a motion transmitting member having a length sufficient to extend between said accelerator pedal and said crank means such that depression of the accelerator will cause rotation of the throttle shaft and concurrent opening of said throttle device, with said motion transmitting member comprising a first end operatively engaged with said accelerator pedal, a second end operatively engaged with said crank means, and a second spring means, positioned intermediate the first and second ends, for deflecting so as to allow further movement of the accelerator pedal without further opening of the throttle device once the throttle shaft has been moved to the wide open throttle position.

5,191,867

HYDRAULICALLY-ACTUATED ELECTRONICALLY-CONTROLLED UNIT INJECTOR FUEL SYSTEM HAVING VARIABLE CONTROL OF ACTUATING FLUID PRESSURE

Stephen F. Glassey, East Peoria, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Oct. 11, 1991, Ser. No. 775,327
Int. Cl.[5] F02M 47/02
U.S. Cl. 123—446 **9 Claims**

1. A hydraulically-actuated electronically-controlled unit injector fuel system comprising:

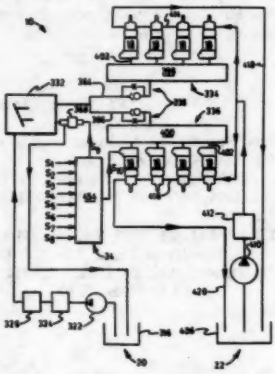
at least one hydraulically-actuated electronically-controlled unit injector;

means for supplying fuel at a first pressure to the unit injector;

means for supplying hydraulically actuating fluid, separate from said fuel, to the unit injector, said supplying means including means for pressurizing the hydraulically actuating fluid, said unit injector including means for intensifying the first pressure of said fuel supplied tot he unit injector, said intensifying means being actuated by the hydraulically actuating fluid supplied to the unit injector;

means for detecting the pressure of the hydraulically actuating fluid supplied to the unit injector and generating a pressure indicative signal indicative of said pressure detected;

means for detecting at least one other parameter and generating a parameter indicative signal indicative of said parameter detected; and



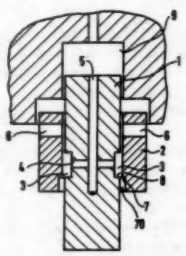
means for electronically controlling the pressure of the hydraulically actuating fluid supplied to the unit injector in response tot he at least one parameter indicative signal and for correcting said pressure amount based on the pressure indicative signal, said pressure controlling means controlling the intensified pressure of said fuel injected by the unit injector independent of the quantity of said fuel injected by the unit injector.

5,191,868

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES HAVING A LOAD-AND/OR RPM-DEPENDENT INJECTION COURSE

Manfred Kraemer, Schwieberdingen, and Johann Warga, Bietigheim-Bissingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 13, 1991, Ser. No. 806,512
Claims priority, application Fed. Rep. of Germany, Jan. 4, 1991, 4100093
Int. Cl.[5] F02M 37/04, 41/00
U.S. Cl. 123—449 **13 Claims**



1. A fuel injection pump in a pump housing for internal combustion engines with a load and rpm-dependent injection course and at least one pump piston, a pump cylinder which is embodied as a cylinder liner is fixed in a suitable bore of the pump housing and the pump piston (1) is driven for a reciprocating drive stroke and is optionally rotatable for controlling fuel, and at least one slide (2) located inside a recess of the cylinder liner on the pump piston (1), the at least one slide

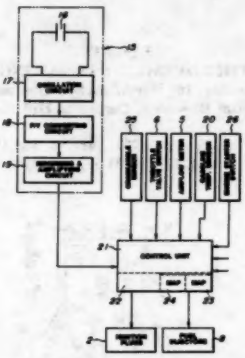
being axially displaceable on the pump piston (1) in order to control fuel flow, the pump piston includes control slits (3) in an outer surface and the at least one slide (2) includes on a lower edge (7) a graduated recess (70, 71) oriented toward the pump piston, and the pump piston (1) has a throttling control location on a lower edge (81, 82) of the control slits (3).

5,191,869

GASOLINE NATURE SENSING SYSTEM

Hideki Kamioka, and Masahiko Shimamura, both of Gumma, Japan, assignors to Japan Electronic Control Systems Co., Ltd., Isezaki, Japan

Filed Mar. 19, 1992, Ser. No. 853,660
Claims priority, application Japan, Oct. 9, 1991, 3-290942
Int. Cl.[5] F02M *51/00*
U.S. Cl. 123—494 **7 Claims**



1. A system for sensing the nature of gasoline, comprising:
- a capacitance type sensor for producing a first information signal representative of the dielectric constant of the gasoline;
- a temperature sensor for producing a second information signal representative of the temperature of the gasoline;
- temperature coefficient deriving means for deriving a temperature coefficient of the gasoline from said first and second information signals;
- additive concentration deriving means for deriving the concentration of any additive in the gasoline from said temperature coefficient;
- correcting means for correcting said first information signal in view of a reference temperature; and
- judging means for judging the nature of the gasoline from the derived concentration of the additive and the corrected first information signal.

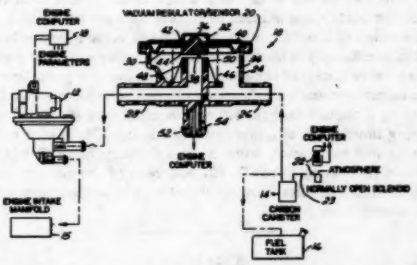
5,191,870

DIAGNOSTIC SYSTEM FOR CANISTER PURGE SYSTEM

John E. Cook, Chatham, Canada, assignor to Siemens Automotive Limited, Chatham, Canada

Continuation-in-part of Ser. No. 676,672, Mar. 28, 1991. This application Oct. 2, 1991, Ser. No. 770,009
Int. Cl.[5] F02M *33/02*
U.S. Cl. 123—520 **15 Claims**

1. A canister purge system comprising a collection canister for collecting volatile fuel vapors from a fuel tank, and means for selectively purging collected fuel vapors from said canister to an internal combustion engine's intake manifold for entrainment with a combustible mixture that passes from the manifold into combustion chamber space of the engine for combustion therein, said means including a purge flow path between said canister and manifold, characterized by a diagnostic system that detects unacceptable leakage in a portion of the canister purge system which portion includes said canister and tank and that comprises atmospheric vent means for selectively venting and unventing the canister and headspace of the tank to atmosphere and vacuum regulator/sensor means that is disposed in said flow path and that is selectively operable to open and close said flow path, characterized further by means for causing said diagnostic system to perform a multiple-part diagnostic test to determine whether any such leakage is present comprising means for performing one part of the test comprising pressure increase detection means comprising means for operating said atmospheric vent means to unvent said portion of the canister purge system to atmosphere, flow control means disposed in said flow path between said vacuum regulator/sensor means and intake manifold for selectively opening and closing said flow path, and means for obtaining a measurement of increase in the vapor pressure in said portion in consequence of unventing of said portion to atmosphere and of closing of said flow path by said flow control means, and means for performing another part of the test comprising means for performing a leakage test on said portion comprising means for operating said atmospheric vent means to unvent said portion to atmosphere and means for operating said flow control means to open said flow path so as to allow engine intake manifold vacuum to commence drawing vacuum in said portion, said vacuum regulator/sensor means comprises means for closing said flow path upon the drawing of a certain magnitude of



vacuum in said portion within a certain measure of time indicative of the absence of a gross unacceptable leak in said portion, means for distinguishing a gross unacceptable leak in said portion from less gross unacceptable leaks by distinguishing the non-attainment of closure of said flow path by said vacuum regulator/sensor means within said measure of time from the attainment of closure of said flow path by said vacuum regulator/sensor means within said measure of time, means effective after the attainment of closure of said flow path by said vacuum regulator/sensor means within said measure of time for operating said flow control means to cause the magnitude of manifold vacuum delivered through said flow path to said vacuum regulator/sensor means to be attenuated from the magnitude that was delivered prior to closure of said flow path by said vacuum regulator/sensor means, and indicator means for indicating the absence of such a less gross unacceptable leak comprising means for indicating whether or not said vacuum regulator/sensor means has, after having closed said flow path, maintained said flow path closed for a certain period of time, and if maintenance of closure of said flow path for said certain period of time is not indicated, for distinguishing between the presence and absence of such a less gross unacceptable leak comprising means for utilizing the measurement obtained from said one test in distinguishing between the presence and absence of such a less gross unacceptable leak.

5,191,871

APPARATUS FOR INJECTING A FUEL-GAS MIXTURE

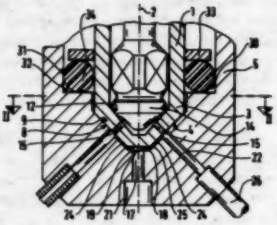
Uwe Liskow, Kornwestheim, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE91/00153, § 371 Date Nov. 8, 1991, § 102(e) Date Nov. 8, 1991, PCT Pub. No. WO91/14093, PCT Pub. Date Sep. 19, 1991

PCT Filed Feb. 23, 1991, Ser. No. 781,161

Int. Cl.[5] F02M 69/08, 69/04, 61/14, 61/18

U.S. Cl. 123—531 18 Claims



1. An apparatus for injecting a fuel-gas mixture, having a fuel injection valve having a longitudinal axis which has, in a valve housing, a valve closing body actuatable as a function of operating state and a number of injection ports corresponding with the number of cylinders or injection groups, each encompassing a plurality of cylinders, of an internal combustion engine, and having a mixing housing which has a gas delivery line serving to deliver gas and extending concentrically with the longitudinal valve axis and which in alignment with the injection ports has a number of mixing lines corresponding to the number of injection ports, wherein the valve head, embodied concentrically with the longitudinal valve axis, protrudes into a valve holder of the mixing housing, and the gas delivery line communicates with the mixing lines, the valve head (3, 53) rests by a contact face (8, 50) on a bearing face (9, 51) of the mixing housing (5, 60), and one gas conduit (24, 70) for each mixing line leads away from the gas delivery line (17, 62) to each of the mixing lines (22, 68), and each of the gas conduits (24, 70) has a smaller cross-sectional area in comparison with the mixing lines (22, 68).

5,191,872

IGNITION COIL UNIT FOR AN INTERNAL COMBUSTION ENGINE

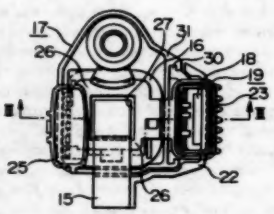
Tadao Takaishi, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 28, 1992, Ser. No. 875,639

Claims priority, application Japan, Apr. 30, 1991, 3-029826[U]; Apr. 30, 1991, 3-029827[U]

Int. Cl.[5] F02P 3/04; H01F 31/00

U.S. Cl. 123—647 7 Claims



1. An ignition coil unit for an internal combustion engine, comprising:

a magnetic iron core;

an ignition coil wound around said iron core;

a coil case containing said iron core and said ignition coil therein;

an ignitor for controlling a primary current flowing through said ignition coil;

an ignitor case containing said ignitor;

a heat sink connected between said coil case and said ignitor case for dissipating heat generated in said ignitor and supporting said ignitor case with respect to said coil case;

additional support means mounted between said ignitor case and said coil case for detachably attaching said ignitor case to said coil case; and

a resin filler material filled in said coil case for holding said ignition coil within said coil case.

5,191,873

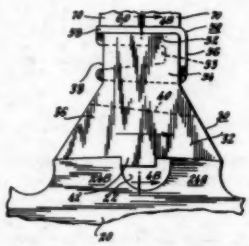
USEFUL IMPROVEMENTS IN SAWING DEVICES

Robert E. Browning, 168 Northfield St., Montpelier, Vt. 05602, and R. McKim Browning, Carpenter Hill Rd., Alfred, Me. 04002

Filed Feb. 24, 1992, Ser. No. 840,120

Int. Cl.[5] B24D 5/12, 5/06

U.S. Cl. 125—15 20 Claims



1. Apparatus for use with a saw core comprising an extender that includes sidewall members having inner surfaces which are retained in side by side and spaced-apart relationship with respect to each other by means of a first separator portion located in the vicinity of a first end of said extender and of a second separator portion located in the vicinity of a second end of said extender which second separator portion is located at the opposite end of said extender from said first end, and

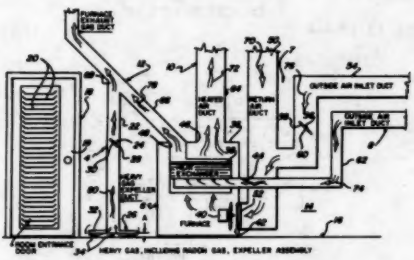
that includes a cavity internal of said extender that is bounded at its sides, top and bottom respectively by said inner surfaces of said sidewall members and said first and second separator portions, and includes openings from said cavity to the outside in those regions not occupied by said sidewalls and said separator portions, said first separator portion being adapted to slideably receive a cutting member base from the direction of one of said openings and positionally retain said base thereon, and said sidewall members being so dimensioned that when the cutting member base to be positioned on said first separator portion is so positioned, at least part of said cavity and said openings are not occupied by said cutting member base, and

that is adapted to be affixed at said first end to a saw core with said openings extending outward past the peripheral edge surface of said core in the direction of an extension of radii of said core and with the opening into said extender in the direction from which first separator is adapted to so receive said cutting member base facing in the direction in which the core is to turn when in use.

5,191,874
HEAVY GAS, INCLUDING RADON GAS, EXPELLER ASSEMBLY

Oliver B. McWilliams, 2748 Fawn Grove Ct., Colorado Springs, Colo. 80906

Filed Jun. 13, 1991, Ser. No. 714,448
Int. Cl.[5] F24F *7/00*
U.S. Cl. 126—312 6 Claims



1. A heavy gas expeller assembly connected to a furnace assembly to remove air and/or heavy gas, including radon gas, adjacent a support floor, comprising:

a) a fluid collector duct member connected in a sealed, fluid flow manner at one end to an exhaust flue duct member from the furnace assembly at an opposite end to a collector inlet assembly positioned adjacent the support floor; and

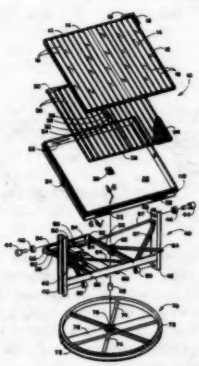
b) an outside air inlet duct member connected to and supplying fresh inlet air to a return air duct and pulled through a filter member by a return air fan assembly in the furnace assembly for positive fluid flow discharge of a mixture of return air and outside fresh air throughout a building structure;

whereby a vacuum is created in said fluid collector duct member to receive fluid from said collector inlet assembly for subsequent discharge from the exhaust fluid duct member.

5,191,875
HIGH EFFICIENCY SOLAR BOILER

Jack V. Edling, 2116 Camino Dr., Escondido, Calif. 92026, and Dale G. Hamreus, Rt. 1 Box 199, Long Beach, Wash. 98631

Filed Sep. 27, 1991, Ser. No. 766,513
Int. Cl.[5] F24J *2/38*
U.S. Cl. 126—576 37 Claims



1. A high efficiency solar boiler which comprises:

a pan having a generally flat bottom and upstanding walls;

a grid in said pan comprising a plurality of substantially parallel tubes, a water manifold connecting first ends of said tubes, a steam manifold connecting second ends of said tubes and means for introducing water into said water manifold and removing steam from said steam manifold;

a cover adapted to be secured to said upstanding walls to close said pan with a plurality of optically cylindrical lenses oriented parallel to said tubes and positioned to focus sunlight falling on said lens in a narrow line along corresponding tubes;

support means adapted to support said pan for rotation in a substantially horizontal plane and for tilting in a substantially vertical plane with the steam manifold end of the pan uppermost;

sensor means comprising two sensors, one aligned with the upper edge of said pan to measure azimuth and the other aligned with a side edge of the pan to measure altitude for detecting orientations of said cover other than perpendicular to the direction of the sun;

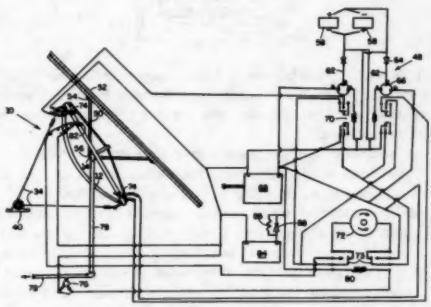
each of said sensors comprises a housing having two end surfaces sloping outwardly from the upper housing surface and a photocell coplanar with each end surface so that when the direction of the sun is perpendicular to said cover all of the sensors will be substantially equally exposed to the sun; and

drive means for receiving signals from said sensor means and moving said pan in azimuth and altitude as necessary to return said cover to a position substantially perpendicular to the direction of the sun.

5,191,876
ROTATABLE SOLAR COLLECTION SYSTEM

Curtis L. Atchley, 7531 Oriental Trail, San Antonio, Tex. 78244

Filed Mar. 4, 1992, Ser. No. 845,620
Int. Cl.[5] F24J *2/38*
U.S. Cl. 126—576 8 Claims



1. A solar heat collection apparatus comprising, in combination:

an elongated metallic conduit for a heat absorbing fluid;

a plurality of longitudinally spaced brackets for supporting said conduit in a position exposed to the sun;

a plurality of elongated support elements transversely disposed relative to said conduit at longitudinally spaced intervals;

bearing means on each said support element rotatably engaging said conduit;

each said support element having a parabolic surface with a focal axis substantially coincident with the axis of said conduit;

a pair of elongated frames respectively rigidly secured to the outer end portions of said elongated support elements;

a flexible rectangular sheet having at least one reflective surface;

means on said elongated frames for engaging the respective longitudinal edges of said sheet and deforming said sheet into conformity with said parabolic surfaces to define a parabolic reflective surface having focal axis coincident with the longitudinal axis of said conduit;

a motor driven shaft disposed beneath said sheet; and

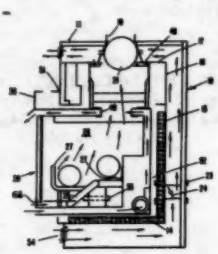
a plurality of cables respectively secured to all ends of said support elements by one cable end and having the other cable end wound around said shaft, each cable connected to one end of a said support element being wound on said shaft in a direction opposite to the cable connected to the other end of said support element, whereby reverse rotations of said shaft respectively effect reverse rotations of said parabolic reflective surface about said focal axis without warping of said parabolic reflective surface.

5,191,877

INSERTABLE GAS CONVERSION UNIT

Ronald J. Shimek, 8944 W. 154th St., Prior Lake, Minn. 55372, and Daniel C. Shimek, 5260 W. 132d St., Apple Valley, Minn. 55124

Filed Aug. 29, 1991, Ser. No. 751,510
Int. Cl.[5] F24C *3/00*
U.S. Cl. 126—512 **18 Claims**



1. A gas fireplace conversion unit adapted to be inserted into a previously installed existing wood burning fireplace, having a exhaust outlet, to provide a gas burning fireplace conversion unit, comprising:

an insertable gas fireplace conversion unit adapted to be mounted inside the combustion chamber of an existing fireplace at a user's site without custom fitting,

said gas conversion unit having a fire fox combustion chamber, an exhaust gas outlet in the top of said fire box and a gas burner mounted in said firebox combustion chamber,

decorative glass door means mounted on said gas conversion unit covering the front of said gas fireplace combustion chamber,

down draft diverter means mounted on top of said fire box over said exhaust gas outlet, said down draft diverter means comprising:

first coupling means for connection to the exhaust outlet of an existing wood burning fireplace,

second coupling means connected to said exhaust gas outlet of said fire box of said combustion chamber of said gas conversion unit, and

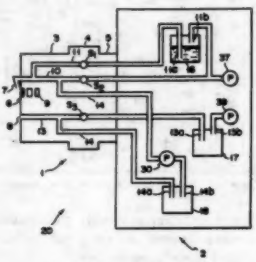
vertical guide means on said first and said second coupling means having side openings for telescopingly fitting said first coupling means into said second coupling means whereby said gas fireplace conversion unit is rapidly connected to a wood burning fireplace through the interconnection of said coupling means without custom fitting of said gas fireplace conversion unit into said existing wood burning fireplace.

5,191,878

ENDOSCOPE DEVICE

Yoshihiro Iida, Tama; Jin Kira, Tokyo; Yutaka Obshima, Hachioji; Toshiyuki Takara, Higashimurayama, and Koji Yamaya, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 9, 1991, Ser. No. 682,739
Claims priority, application Japan, Apr. 12, 1990, 2-39839[U]; Apr. 25, 1990, 2-107547; Aug. 22, 1990, 2-221681; Oct. 26, 1990, 2-286979
Int. Cl.[5] A61B *1/00*
U.S. Cl. 128—4 **13 Claims**



1. An endoscope device comprising:

an endoscope having a front end portion provided with a nozzle and a sucking opening;

fluid supply means haivng a first passage connected to the nozzle for supplying a fluid to said nozzle;

suction means having a second passage connected to said sucking opening;

fluid circulating means having a fluid circulation pump attached to a third passage, said third passage being in fluid communication with both said first and second passages, said fluid circulation means circulating a sucked-in fluid through said third passage such that said sucked-in fluid is sucked in through said sucking opening and said second passage and expelled as a jet stream through said first passage and said nozzle; and

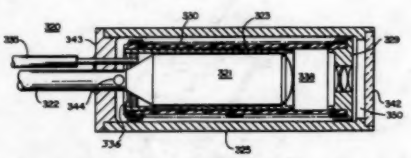
a vessel attached to said third passage, said vessel being in fluid communication with a discharge side of said circulation pump, said vessel separating a gas from said sucked in fluid flowing through said third passage.

5,191,879

VARIABLE FOCUS CAMERA FOR BORESCOPE OR ENDOSCOPE

Allan I. Krauter, Syracuse, N.Y., assignor to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Jul. 24, 1991, Ser. No. 735,269
Int. Cl.[5] A61B *1/04*
U.S. Cl. 128—4 **10 Claims**



1. A remotely focusing camera assembly for a borescope or endoscope of the type wherein an elongated insertion tube has a distal head which contains an imager, the insertion tube having an image-carrying cable extending proximally from the image within the insertion tube to a viewing device for displaying an image of an object in the field of view of the imager, the camera assembly comprising:

a tubular head sleeve at the distal head of said insertion tube,

a lens assembly including a focusing lens set and a tubular lens holder mounting same disposed at a distal end of the head sleeve;

an imager sleeve within the head sleeve, the imager sleeve containing the imager fixedly mounted therewithin;

with one of said lens assembly and said imager sleeve being fixedly mounted within the head sleeve, and the other thereof being axially slidable within said head sleeve;

means sealing the proximal end of said imager sleeve;

an elongatable braid and bladder assembly mounted onto a portion of said imager sleeve and said lens assembly such that the lens assembly, the braid and bladder assembly, the imager, the imager sleeve, and said sealing means define a confined volume, said bladder assembly including an elastomeric tube affixed at its one end over the imager sleeve and at its other end over said tubular lens holder of the lens assembly, and a braid disposed over said elastomeric tube and having substantially inelastic filaments oriented at an angle relative to the axis of the tube that substantially exceeds 54.7 degrees; and

means for applying a controlled pressure into said confined volume for controllably elongating said bladder assembly to move said imager sleeve relative to said lens assembly between a far-focus positioned and a near-focused position.

5,191,880

METHOD FOR THE PROMOTION OF GROWTH, INGROWTH AND HEALING OF BONE TISSUE AND THE PREVENTION OF OSTEOPENIA BY MECHANICAL LOADING OF THE BONE TISSUE

Kenneth J. McLeod, 28 Setalcott Pl., Setauket, N.Y. 11733, and Clinton T. Rubin, 108 Bleeker St., Port Jefferson, N.Y. 11776

Continuation of Ser. No. 560,186, Jul. 31, 1990, Pat. No. 5,103,806. This application Apr. 13, 1992, Ser. No. 865,148

The portion of the term of this patent subsequent to Apr. 14, 2009, has been disclaimed.

Int. Cl.[5] A61N *1/00*

U.S. Cl. 128—24 AA **13 Claims**

1. A method for preventing osteopenia, as well as for promoting growth, ingrowth and healing of bone tissue, which comprises the step of:

subjecting the bone tissue to a mechanical load sufficient to cause a strain in the bone tissue at a relatively low level of between about 10 and about 1000 microstrain, peak-to-peak, and at a relatively high frequency of between about 10 and about 100 hertz, said step being administered for a total of about 5 to about 60 minutes per day.

5,191,881

INSUFFLATING/SUCTIONING VALVE

Blaine E. Beck, Roswell, Ga., assignor to Genesis Medical, Ltd., Roswell, Ga.

Filed Jan. 28, 1991, Ser. No. 646,581

Int. Cl.[5] A62B *9/02*

U.S. Cl. 128—205.24 **5 Claims**

1. An insufflating valve comprising:

a) a valve body;

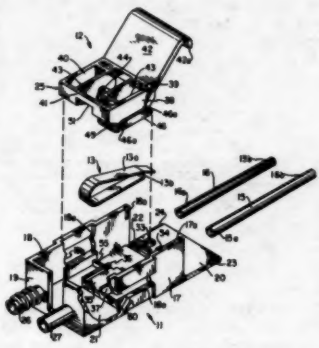
b) resilient tube means extending within said body adapted for connection individually to sources externally of said body of oxygen and of suction to conduct oxygen and suction flow respectively through said body;

c) said tube means being connected to catheter means externally of said valve body to permit flow of oxygen and suction into and from said catheter means;

d) means for crimping said tube means to permit flow there through and means for releasing said crimping means to permit flow there through;

e) said tube means comprising two separate resilient tubes one of which is connected to a source of oxygen and the other to a source of suction; said crimping means and said releasing means including means for alternatively crimping one tube while releasing the other;

f) said tube crimping means and said releasing means including means to shut off flow in both tubes prior to permitting flow alternatively through either tube;



g) said tube crimping means and said means for releasing said crimping means includes a valve actuating mechanism having an actuating arm extending from said valve body, and spring means automatically connected with said actuating mechanism to shut off flow in both tubes upon release of said actuating arm.

5,191,882

APPARATUS FOR ENABLING A STRAPLESS BREATHING MASK TO BE WORN WITHOUT A PROTECTIVE HELMET

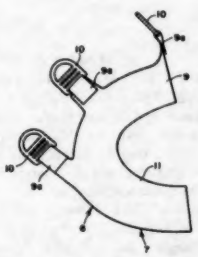
German Vogliano, Berlin, Fed. Rep. of Germany, assignor to Auergesellschaft GmbH, Berlin, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 480,738, Feb. 16, 1990, abandoned. This application Mar. 12, 1991, Ser. No. 667,879

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1989, 3907428

Int. Cl.[5] A62B *18/08*

U.S. Cl. 128—207.11 **5 Claims**



1. An apparatus for enabling a strapless breathing mask including a strapless body, a window shield and a window frame, that is normally worn by a user in conjunction with a protective helmet, to be worn by the user without the protective helmet, the apparatus comprising:

a resilient holder having an opening through which the window frame of the mask is inserted and within which the mask is supported, wherein the opening corresponds substantially to the shape of the periphery of the window frame; and

a head strap assembly connected to the resilient holder.

5,191,883

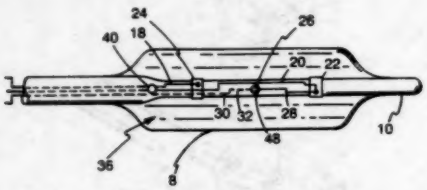
DEVICE FOR HEATING TISSUE IN A PATIENT'S BODY

Charles D. Lennox, Nashua, N.H.; Richard A. Noddin, Hollis-ton, and Ronald Sahatjian, Lexington, both of Mass., assign-ors to Prutech Research and Development Partnership II, San Jose, Calif.

Division of Ser. No. 263,815, Oct. 28, 1988, Pat. No. 4,955,377. This application May 22, 1990, Ser. No. 527,047

Int. Cl.[5] A61F *7/12*

U.S. Cl. 128—401 **22 Claims**



1. Catheter device for heating tissue, comprising

a flexible catheter shaft constructed for insertion into a patient's body and sized to pass through a body lumen,

a chamber mounted on the shaft, the chamber defined by a wall which at least in part is expandable, the chamber being associated with a lumen for fluid flow between said chamber and a fluid source outside of said body, the chamber being fillable after placement in the body with an electrically conductive fluid preselected to produce resistive heating, said chamber having dimensions suitable for use within said body lumen,

a plurality of spaced, low-profile electrical contacts enclosed within the chamber and a corresponding plurality of conductors for connecting the low-profile electrical contacts to a power supply for applying a radio frequency electrical potential between the contacts,

said low-profile contacts being exposed to the fluid-containing space of said chamber so that said radio frequency electrical potential can cause current to flow through fluid between the contacts,

said chamber and said low-profile contacts being cooperatively constructed and arranged to cause said current to be substantially confined to said fluid within the chamber,

whereby on the basis of I^2R losses of said radio frequency electric current flowing between the low-profile electrical contacts, the fluid can be heated and the fluid in turn can heat the surrounding tissue by thermal conduction through a wall of the chamber.

5,191,884

RECONFIRMATION PRIOR TO SHOCK FOR IMPLANTABLE DEFIBRILLATION

Norma L. Gilli, Mosman; Lorraine Holley, Rockdale; Geoffrey A. Drane, Annandale; Anthony C. Stephens, Willoughby; Christopher N. Daly, Bilgola Plateau, all of Australia, and Steven M. Maas, Englewood, Colo., assignors to Telectronics N.V., Curacao, Netherlands Antilles

Continuation of Ser. No. 239,624, Sep. 1, 1988, abandoned. This application Aug. 29, 1990, Ser. No. 576,178

Claims priority, application Australia, Sep. 2, 1987, PI4104

Int. Cl.[5] A61N *1/39*

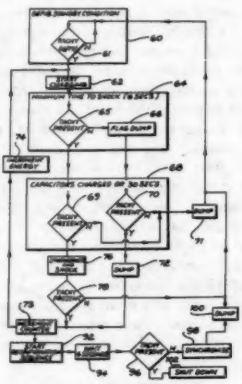
U.S. Cl. 128—419 D **14 Claims**

1. An apparatus for treating a tachyarrhythmia of the heart comprising:

detection means for detecting a tachyarrhythmia;

shock means for delivering a shock to the heart; and

reconfirmation means for confirming a presence of the tachyarrhythmia subsequent to detection by said detection means and for reconfirming the presence of the tachyarrhythmia immediately prior to delivery of a shock by said shock means, said reconfirmation means controlling said shock means so that only if the presence of said tachyarrhythmia is both confirmed and reconfirmed does said shock means deliver said shock to the heart, said reconfirmation means confirming the presence of said tachyarrhythmia at a first predetermined time after detection of



said tachyarrhythmia by said detection means, and reconfirming the presence of said tachyarrhythmia at a second time after detection by said detection means, said second time being no greater than a second predetermined time after said first time.

5,191,885

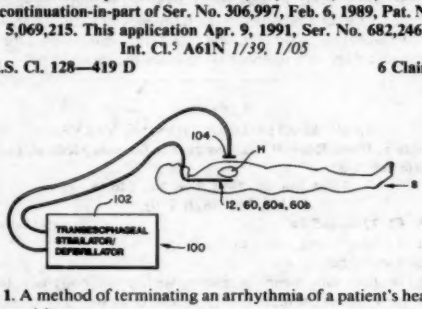
METHOD OF TERMINATING AN ARRHYTHMIA

Richard M. Bilof, Wonder Lake, and Stuart E. Schwartz, Arlington Heights, both of Ill., assignors to Arczo Medical Electronics, Inc., Vernon Hills, Ill.

Continuation-in-part of Ser. No. 608,200, Nov. 2, 1990, which is a continuation-in-part of Ser. No. 306,997, Feb. 6, 1989, Pat. No. 5,069,215. This application Apr. 9, 1991, Ser. No. 682,246

Int. Cl.[5] A61N *1/39, 1/05*

U.S. Cl. 128—419 D **6 Claims**



1. A method of terminating an arrhythmia of a patient's heart comprising:

positioning a plurality of substantially identical conducting members in the patient's esophagus adjacent to a posterior surface of the heart;

pulsing selected of the conducting members with electrical signals of a predetermined frequency thereby terminating the arrhythmia, wherein the arrhythmia terminating electrical signals have a current amplitude in a range of 10–40 milliamps, and

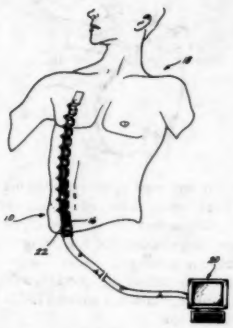
wherein the electrical signals have a pulse width on the order of 10 milliseconds.

5,191,886

MULTIPLE ELECTRODE STRIP

David S. Paeth, Seattle; Stephen W. Gross, Snohomish, and Thomas D. Lyster, Bothell, all of Wash., assignors to Physio-Control Corporation, Redmond, Wash.

Filed Apr. 18, 1991, Ser. No. 687,302
Int. Cl.[5] A61B 5/0402
U.S. Cl. 128—640 24 Claims



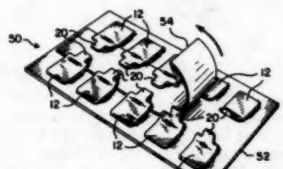
1. An electrode strip for placement on a body, comprising:
a substantially inextendible substrate having first and second surfaces, a plurality of electrode sites on the first surface of the substrate, and a region of extensibility defined in the substrate between a pair of adjacent electrode sites to allow selective positioning of the adjacent electrode sites on the body; and
a plurality of spaced-apart conductive leads that extend along the first surface of the substrate to a different one of the electrode sites.

5,191,887

ASSEMBLY FOR DISPENSING TAB ELECTRODES

James V. Cartmell, Xenia, Ohio, assignor to NDM Acquisition Corp., Minneapolis, Minn.

Division of Ser. No. 708,741, May 31, 1991. This application Jul. 20, 1992, Ser. No. 915,314
Int. Cl.[5] A61B 5/0402
U.S. Cl. 128—640 9 Claims



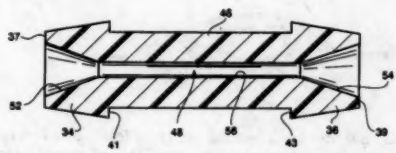
1. An assembly for dispensing electrodes used in conjunction with electrocardiograph apparatus comprising:
a carrier sheet;
a pull strip releasably mounted along a longitudinal center of said carrier sheet; and
an electrode having a projecting tab, said electrode being mounted on said carrier sheet such that said tab at least partially overlies said pull strip, whereby said pull strip may be pulled upwardly to expose said tab of said electrode for access thereto.

5,191,888

ASSEMBLY OF AN EXTENSION GUIDEWIRE AND AN ALIGNMENT TOOL FOR SAME

Matthew Palmer, Miami; John J. Starkey, Cooper City, and Fernando M. Viera, Hialeah, all of Fla., assignors to Cordis Corporation, Miami Lakes, Fla.

Continuation of Ser. No. 510,537, Apr. 18, 1990, abandoned, which is a continuation-in-part of Ser. No. 510,522, Apr. 18, 1990, Pat. No. 5,139,032, and a continuation-in-part of Ser. No. 510,523, Apr. 18, 1990, Pat. No. 5,113,872. This application Mar. 31, 1992, Ser. No. 860,264
Int. Cl.[5] A61B 6/00
U.S. Cl. 128—657 10 Claims



1. An assembly of an extension wire and an alignment tool for aligning the proximal end of a medical catheter wire with connecting means at the distal end of said extension wire or at the proximal end of the medical catheter wire, said alignment tool comprising a body having (a) enlarged end portions, (b) a smaller-in-cross-section middle portion so that said large end portions define abutment means facing inwardly of said body toward said middle portion, and (c) passage means extending through said body along a longitudinal axis of said body and including a middle, generally cylindrical portion of substantially uniform diameter and first and second inlet means for receiving and guiding into each end, respectively, of said passageway and into said middle portion both the proximal end of a medical catheter wire or the distal end of said extension wire and the connecting means at the distal end of the extension wire or at the proximal end of the medical catheter wire, each of said inlet means at each end of the passage means of the alignment tool extending along the longitudinal axis and including an outwardly opening passage opening onto one of two opposite end faces of the body, and the body of the alignment tool being generally cylindrical in shape with the middle cylindrical portion of uniform diameter and with the opposite end faces facing outwardly and each lying in a plane generally normal to the longitudinal axis, the enlarged end portions comprising generally frusto-conical end portions each tapering or flaring radially outwardly from one of the end faces and axially toward the other end portion to an axially facing annular surface extending radially outwardly from the middle uniform diameter portion, the axially facing annular surfaces defining the abutment means.

5,191,889

TRANSDUCER HEAD FOR A MEDICAL INSTRUMENT AND METHOD OF USE

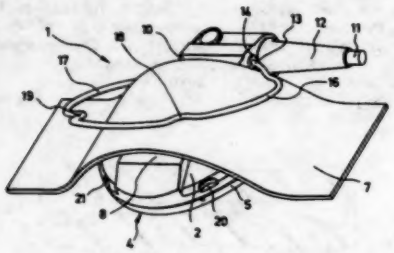
Markus Mornhinweg, Ulm, and Fritz Stepper, Boeblingen, both of Fed. Rep. of Germany, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 4, 1991, Ser. No. 680,563
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1990, 9004824[U]
Int. Cl.[5] A61B 8/02
U.S. Cl. 128—662.04 8 Claims

1. A transducer head for a medical instrument, comprising:
a housing for a transducer adapted to be held, by a belt, in contact with a patient; and
fastening means for affixing said housing to said belt, said fastening means comprising a bow adapted to be locked relative to said housing in such a position that said belt extends across said housing on a side of said housing

facing away from the patient and rests between said bow and said housing;

said housing comprising at least one swivel bearing sleeve having an axis extending in a lengthwise direction of the belt; and



said bow forming a bearing pin on at least one of its ends, said bearing pin being supported in said swivel bearing sleeve.

5,191,890

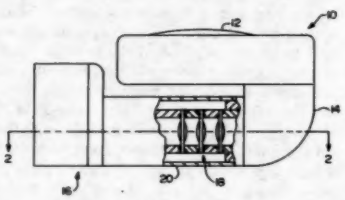
ULTRASONIC PROBE ASSEMBLY

Ronald E. Hileman, Lewistown, Pa., assignor to Interspec, Inc., Ambler, Pa.

Filed Apr. 22, 1991, Ser. No. 689,185

Int. Cl.[5] A61B *8/12*

U.S. Cl. 128—662.06 **31 Claims**



1. An ultrasonic probe assembly comprising:

an ultrasonic array unit including an ultrasonic array for scanning in a scan plane and an array mount upon which said ultrasonic array is mounted, said ultrasonic array unit movable through a positioning angle extending in a plane perpendicular to said scan plane to change the disposition of said scan plane;

a base unit;

a flexible coupling extending between said base unit and said ultrasonic array unit;

a flexible tube extending between said base unit and said ultrasonic array unit and within which said flexible coupling extends;

a remote control unit for selecting an angular position of said ultrasonic array unit corresponding to a selected disposition of said scan plane of said ultrasonic array;

and position control means, including flexible connecting means, extending from said remote control unit through said base unit and said flexible tube to said ultrasonic array unit and responsive to said remote control unit for moving said ultrasonic array unit to said selected angular position, said flexible connecting means having a length which permits positioning said base unit and said ultrasonic array unit within a body cavity of a patient while said remote control unit remains outside the body of the patient.

5,191,891

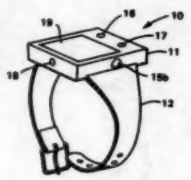
PORTABLE ECG MONITOR/RECORDER

William H. Righter, Aloha, Oreg., assignor to Ralin, Inc., Bannockburn, Ill.

Filed Sep. 10, 1991, Ser. No. 757,254

Int. Cl.[5] A61B *5/02*

U.S. Cl. 128—710 **30 Claims**



1. A wrist-worn, encased apparatus having electronic circuitry for selectively monitoring, recording and transmitting a user's electrocardiographic (ECG) signals, wherein an electrode arrangement is provided for acquiring said ECG signals, said arrangement comprising:

a first conductive electrode disposed on a first surface of the apparatus casing for contact with an ECG lead position on the user's body; and

second and third conductive electrodes disposed on at least one other surface of the apparatus casing and positioned for ease of contact by the user's hand when the first electrode is placed in contact with an ECG lead position on the user's body, wherein one the second and third electrodes provides a ground signal source for the electronic circuitry, and wherein the electronic circuitry is activated only when the user touches the three electrodes.

5,191,892

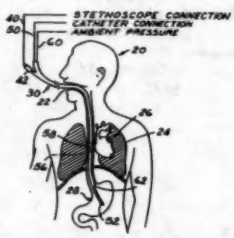
ESOPHAGEAL/STETHOSCOPIC GASTRIC TUBE

Wayland G. Blikken, 69 Bay Circle Dr., Holland, Mich. 49424

Filed Sep. 10, 1991, Ser. No. 757,269

Int. Cl.[5] A61B *5/02*

U.S. Cl. 128—715 **3 Claims**



1. An instrument for use during surgical operations in which a general anesthetic is administered, comprising a composite multi-lumen tube having a proximal end and a distal end for nasal or oral introduction into the esophagus, said tube having a main lumen extending from the proximal end of the tube and ending in a catheter at a distal end to be located in the stomach, means at the proximal end of the main lumen for connection to a negative pressure source, a second lumen having a proximal end and a distal end positioned lineally of the composite tube having a distal end in the general area of the heart and lung when inserted, a stethoscopic pick-up in said second lumen adjacent its distal end, a stethoscopic connection connected to the pick up at the proximal end of the composite tube, and a third lumen having a proximal end and a distal end co-lineal with said first and second lumens extending from an atmospheric opening at the proximal end of the composite tube to a distal vent opening positioned proximal to the catheter be-

tween the distal end of the main lumen and the stethoscopic pick-up to be open to the stomach to relieve negative pressure.

5,191,893

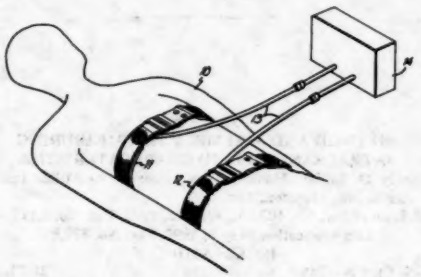
VOLUME VARIATION SENSOR AND METHOD FOR OBSTRUCTIVE SLEEP APNEA MONITORING

Denise M. Reiten, Champlin, Minn., assignor to CNS, Inc., Chanhassen, Minn.

Continuation of Ser. No. 525,892, May 18, 1990, abandoned. This application May 12, 1992, Ser. No. 884,853

Int. Cl.[5] A61B *5/113*

U.S. Cl. 128—721 **7 Claims**



1. A first volume change sensor for sensing volume changes in a flexible body subject to such volume changes, said first sensor comprising:

a tubular enclosure formed by a flexible wall about an interior region, said tubular enclosure being airtight except for at least one conduit having a conduit wall about a conduit passsageway therein connected to said flexible wall at an end of said conduit such that said conduit passageway opens to said interior region of said tubular enclosure with said conduit having an opposite end adapted for connection to a pressure monitor, said tubular enclosure being sufficiently elongated so as to be capable of being positioned substantially about a said flexible body, said flexible wall being sufficiently thin so as to be easily deformable;

an elongated insert formed of a unitary body of resiliently deformable, open cell foam and positioned in said interior region of said tubular enclosure; and

an elastic belt with a pair of opposite sides against one of which said tubular enclosure is positioned, said belt having fastening means at opposite ends thereof for being selectively joined together to secure said tubular enclosure about a said flexible body between said belt and that said flexible body; said insert, if undeformed by external forces at a cross section thereof taken substantially perpendicular to its direction of elongation, having an extent at that cross section in a direction substantially parallel to said belt exceeding its extent there in a direction substantially perpendicular to said belt; wherein said insert is an entity that, if undeformed, has an area at said cross section thereof that exceeds half that area at its greatest extent of a substantially parallel cross section of said tubular enclosure at that same location.

5,191,894

BRAIN WAVE INDUCING APPARATUS

Mitsuo Yasushi, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Feb. 11, 1992, Ser. No. 833,936

Claims priority, application Japan, May 28, 1991, 3-123687

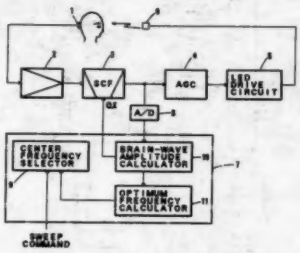
Int. Cl.[5] A61B *5/04*

U.S. Cl. 128—733 **17 Claims**

1. A brain wave inducing apparatus, in which the brain waves of a testee are first subjected to filtering to provide a brain wave inducing signal having an optimum frequency for inducing a desired brain wave and in which the testee is optically stimulated by the brain wave inducing signal, comprising;

a band pass filter, having a variable center frequency, for outputting a selected frequency component of said brain waves based on a selected center frequency said center frequency being varied in accordance with a signal supplied thereto, in order to sweep across a frequency of brain waves of the testee;

a brain wave amplitude calculator for calculating and storing therein each selected center frequency and each corresponding amplitude of the output of said band pass filter;



an optimum frequency calculator for calculating and outputting a command indicative of an optimum center frequency of said band pass filter based on the center frequencies and corresponding amplitudes stored by the brain wave amplitude calculator; and

a center frequency selector for changing the center frequency of said band pass filter in accordance with the command from said optimum frequency calculator.

5,191,895

METHOD AND APPARATUS FOR THE DIAGNOSIS OF POLYNEUROPATHY SYNDROMES

Peter Koltringer, Lortzingasse 20, Graz, Austria

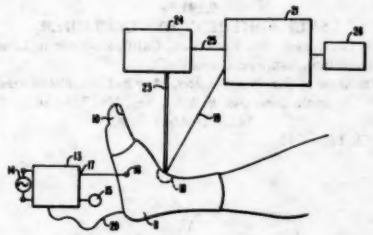
PCT No. PCT/EP89/00378, § 371 Date Dec. 1, 1989, § 102(e) Date Dec. 1, 1989, PCT Pub. No. WO89/09562, PCT Pub. Date Oct. 19, 1989

PCT Filed Apr. 7, 1989, Ser. No. 445,724

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1988, 3811855; Sep. 22, 1988, 3832245

Int. Cl.[5] A61B *5/02*

U.S. Cl. 128—736 **6 Claims**



1. A method for determining a subject's nerve damage comprising:

determining an initial temperature value at an extremity of the subject;

provoking an increase in skin temperature at the extremity;

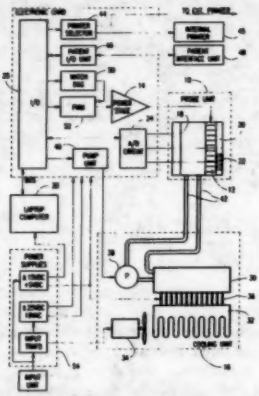
determining a plurality of skin temperature values at the extremity as the skin temperature rises and measuring a time interval for the skin to rise between said values; and

evaluating the measured time interval as a measure of the nerve damage.

5,191,896
APPARATUS FOR MEASURING THRESHOLD SENSITIVITY TO A STIMULUS

Ehud Gafni, Ramat Yishai, and David Yarnitsky, Haifa, both of Israel, assignors to Medoc Ltd., Ramat Yishai, Israel

Filed Jun. 28, 1991, Ser. No. 722,666
Int. Cl.[5] A61B 5/00
U.S. Cl. 128—742 **12 Claims**



10. Apparatus for measuring threshold sensitivity to a stimulus comprising:

sensory stimulation application means for providing stimulus to a subject;

computer means for governing operation of said sensory stimulation application means; and

operator interface means for interfacing between an operator and said computer means,

said computer means and said operator interface means including means for enabling an operator to selectably apply said stimulus to a patient in accordance with the following protocols, each including a plurality of different trials:

method of limis; forced choice method; and staircase method,

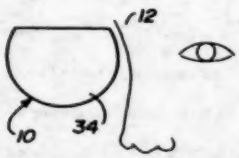
said operator interface means comprising:

means for selectably providing randomization of the order of said trials.

5,191,897
SELF-ADHERENT EYE OCCLUDER

LeRoy G. Meshel, San Francisco, Calif., assignor to Lens Plus Corporation, San Francisco, Calif.

Continuation of Ser. No. 349,459, May 8, 1989, abandoned. This application Jul. 8, 1991, Ser. No. 725,788
Int. Cl.[5] A61F 9/00
U.S. Cl. 128—745 **13 Claims**



1. A disposable self-adherent eye occluder for use in visual diagnostic testing and treatment said eye occluder comprising eye occluder means including a flexible thin sheet, having top and bottom edges and posterior and anterior sides, and a pressure-sensitive adhesive material applied directly only to a region proximal to the top edge of the posterior side of said flexible sheet, said adhesive being capable of adhering said eye occluder to either the periorbital tissue of said eye or to spectacles worn over said eye, said flexible sheet shaped to contour to periorbital tissue, said eye occluder means being constructed to cause said flexible thin sheet to flexibly drape or contour over only one eye and to depend downwardly and terminate in a free end to substantially block the forward vision of said eye, without being fully light occlusive to the eye's periphery when said eye occluder is placed over said eye.

5,191,898
METHOD AND ASSEMBLY FOR MEASURING INTRACRANIAL FLUID CHARACATERISTICS

Huntly D. Millar, Houston, Tex., assignor to Millar Instruments, Inc., Houston, Tex.

Division of Ser. No. 602,152, Oct. 22, 1990, Pat. No. 5,117,836. This application May 5, 1992, Ser. No. 878,858
Int. Cl.[5] A61B 5/00
U.S. Cl. 128—748 **21 Claims**

1. An assembly for measuring the fluid characteristics in a region of intercranial fluid, comprising:

a flexible in-dwelling catheter having a proximal end and a distal end, the distal end having a plurality of openings, wherein the distal end of the in-dwellings catheter is adapted to be placed in communication with said intracranial fluid through a passage in the skull;

a grooved stainless steel needle adapted to be routed subdermally between the scalp and skull from said passage to an exit point spaced from said passage, and having a proximal end removably attachable to the proximal end of said in-dwelling catheter and a distal end having a beveled point, wherein the distal end of the in-dwelling catheter and the distal end of the needle extend in opposite directions when the two elements are connected;

a transducer tipped catheter to measure fluid characteristics in a region of intracranial fluid, dimensioned to be positioned through said exit point, through the groove of said needle and to reside within the distal end of said in-dwelling catheter;

means for connecting said needle to the proximal end of said in-dwelling catheter, so that the needle and the proximal end of said in-dwelling catheter can be drawn out of said exit point; and

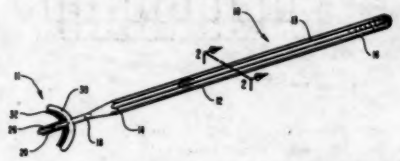
a monitor to analyze fluid characteristics in a region of intracranial fluid, the monitor being electrically connected to said transducer tipped catheter.

5,191,899

PAP SMEAR COLLECTION DEVICE WITH BRISTLES ORIENTED IN A PLANE

Richard D. Strickland, Sandy, Utah, and Geno Saccomanno, Grand Junction, Colo., assignors to Baal Associates, Inc., Sandy, Utah

Filed Dec. 12, 1991, Ser. No. 806,583
Int. Cl.[5] A61B 10/00
U.S. Cl. 128—756 36 Claims



1. A device for collection of tissue cells from a cervical face and endocervical canal of a uterus comprising:

(a) an elongated handle having a forward end and a rear end;

(b) tissue sampling means, located at the forward end of said handle, for simultaneously collecting tissue cells from the cervical face and endocervical canal, said sampling means comprising:

(i) first means providing a plurality of bristles oriented in a row and in a plane for contacting and collecting cells within the endocervical canal as said handle is rotated, said first means aligned with said handle and extending from said forward end therefrom; and

(ii) second means providing a plurality of bristles oriented in a row and in the same said plane for contacting and collecting cells from the cervical face as said handle is rotated, said second means extending from said forward end of said handle in a direction generally orthogonal to said first means; and

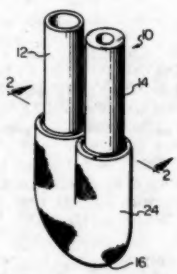
(c) flexible means positioned at said forward end of said handle for bending said tissue sampling means at an acute angle with respect to the handle for assistance in dislodging the collected tissue cells from said first and second means onto an area for examination.

5,191,900

DIALYSIS PROBE

Pravin K. Mishra, Peoria, Ill., assignor to The Board of Trustees of the University of Illinois, Ill.

Filed Apr. 10, 1991, Ser. No. 683,080
Int. Cl.[5] A61M 25/00
U.S. Cl. 128—769 14 Claims



1. In microdialysis probe apparatus for fluid sampling of biological substances in living tissue, including an inlet tube for continuously delivering a fluid flow under positive fluid pressure to said living tissue, an outlet tube for continuously removing a fluid flow and biological substances from said living tissue, and a semipermeable dialysis fiber membrane at one end of said inlet and outlet tubes for insertion into said living tissue and performing dialysis, the improvement comprising:

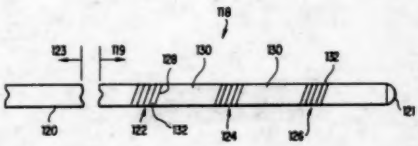
membrane support means, including said outlet tube inner diameter bring less than the inner diameter of said inlet tube, and said fluid flow being maintained at a rate with respect to the inner diameter of said outlet tube and the length of said outlet tube sufficient for enabling an effective optimum positive pressure to be maintained within said membrane provided by partial restriction of the continuous fluid flow sufficient to reliably self-support and maintain the shape of said membrane during insertion and dialysis sampling without requiring a physical support to maintain the membrane shape.

5,191,901

CONTROLLED DISCHARGE DEFIBRILLATION ELECTRODE

Roger W. Dahl, Andover, and Ronald W. Heil, Jr., Roseville, both of Minn., assignors to Mieczyslaw Mirowski, Owings Mills, Md.

Filed Aug. 29, 1991, Ser. No. 751,533
Int. Cl.[5] A61N 1/05
U.S. Cl. 128—786 3 Claims



1. An electrode for implantation in, on or about the heart for connection to a defibrillation/cardioversion system, said electrode comprising:

an elongated cardiac catheter having a distal active portion and a proximal lead portion;

a discharge surface region positioned along substantially the entire length of said distal active portion for delivering energy to the heart;

a plurality of electrically conductive wires filling said discharge surface region, said wires being spaced apart, attached to, and wound around the periphery along the length of the distal active portion of said catheter, said wires being electrically connected together and electrically connected to said defibrillation/cardioversion system; and

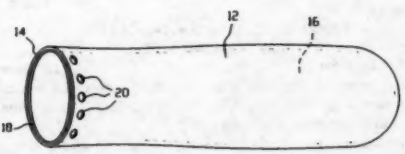
an electrically insulative element covering the surface of said electrode opposite said discharge surface region.

5,191,902

PROPHYLACTIC DEVICE

Peter J. Wilk, 185 W. End Ave., New York, N.Y. 10023

Filed Jan. 3, 1992, Ser. No. 816,461
Int. Cl.[5] A61F 5/00
U.S. Cl. 128—844 10 Claims



1. A prophylactic device comprising:

a first condom having a first base, said condom being closed at an end opposite said base;

a second condom inserted inside said first condom, said second condom having a second base, said second condom being open at said second base and closed at an end opposite said second base; and

means for attaching said first condom and said second condom to one another about their respective bases, said first condom being provided in a region about said first base with an opening for permitting the evacuation of air from between said first condom and said second condom during use of the device.

5,191,903

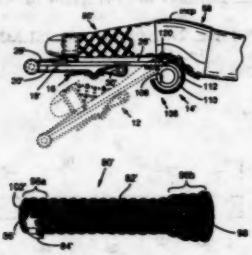
DIGITAL TRACTION SYSTEM

Patrick T. Donohue, 1822 N.E. 143rd, Portland, Oreg. 97230

Filed Jun. 6, 1991, Ser. No. 711,916

Int. Cl.[5] A61F *5/04*

U.S. Cl. 128—879 **17 Claims**



1. A traction system for applying traction to at least one of the metacarpophalangeal joints (mcp) of a hand, the hand having a plurality of digits (f) and crotches (fc) between the digits, the system including a traction frame (**18, 18'**) for anchoring alongside the hand and means (**16**) connectable between at least one digit and the frame for applying an axial traction force through the digit to the corresponding metacarpophalangeal joint characterized in that

the system includes a glove-like anchoring member (**58**) embracing and covering at least part of the hand in a substantially fixed relationship with the hand and in that the traction frame (**18, 18'**) is anchored to the hand by means of connection to the anchoring member (**58**) and in that the means (**16**) for applying a traction force comprises an elongated flexible element having first and second opposite ends and including an elastic portion, the first end being connectable to the at least one digit and the second end being connectable directly to the frame, and so that, in use, retraction of the traction frame under the action of the traction force applying means (**16**) is resisted substantially by the engagement of the anchoring member (**58**) with the hand.

5,191,904

TRASH REMOVAL APPARATUS AND METHOD

Robert A. Arents, Richmond, and Everett C. Patterson, Midlothian, both of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Aug. 19, 1991, Ser. No. 746,746

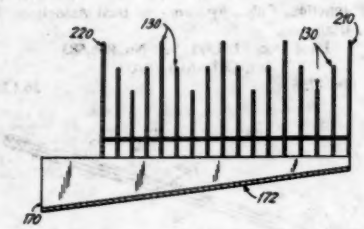
Int. Cl.[5] A24C *5/36*

U.S. Cl. 131—96 **27 Claims**

1. An apparatus for separating the components of a mixture comprising cigarettes, cigarette wrapper, large trash, small trash and loose tobacco, comprising:

a trash removal conveyor having a first end and a second end, wherein said trash removal conveyor comprises a plurality of vertical plates each of which has a top surface, the top surfaces being arranged in a pattern comprising at least three levels;

a vibrating means for vibrating the trash removal conveyor; and



a screen means that is mounted on the trash removal conveyor below the vertical plates.

5,191,905

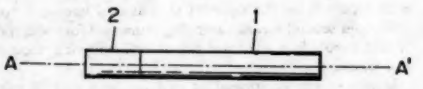
FILTER CIGARETTE HAVING FILTER CONTAINING ABSORPTIVE SYNTHETIC GRAFT POLYMER FIBERS PRODUCED FROM IRRADIATED POLYETHYLENE REACTED WITH VAPOR PHASE STYRENE OR ABSORPTIVE SYNTHETIC MAGNETIC FIBERS

Kenkichi Tsukamoto, Tokyo, Japan, assignor to Costarica Sogo Kaihatsu Co., Ltd., Tokyo, Japan

Filed Mar. 12, 1991, Ser. No. 667,950

Int. Cl.[5] A24D *3/00*

U.S. Cl. 131—332 **13 Claims**



1. A filter cigarette comprising:

a cigarette section formed by wrapping shredded tobacco in a cigarette paper sheet; and

a filter section having a filter chip and integrally joined to the cigarette section;

wherein the filter chip is formed by combining in a bundle absorptive synthetic graft polymer fibers produced from irradiated polypropylene reacted with vapor phase styrene and containing adsorptive, functional groups and at least one absorptive synthetic fiber selected from the group consisting of (1) activated carbon fibers, (2) charged electret fibers, and (3) magnetic plastic fibers and chopping the combined fiber bundle to a predetermined length.

5,191,906

PROCESS FOR MAKING WRAPPERS FOR SMOKING ARTICLES WHICH MODIFY THE BURN RATE OF THE SMOKING ARTICLE

James L. Myracle, Jr., Midlothian, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Continuation of Ser. No. 777,466, Oct. 17, 1991, abandoned, which is a continuation of Ser. No. 605,402, Oct. 30, 1990, abandoned. This application Mar. 23, 1992, Ser. No. 855,491

Int. Cl.[5] A24D *1/02*

U.S. Cl. 131—365 **11 Claims**

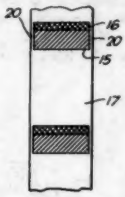
1. A process for modifying the burn rate of a smoking article by applying segments of band paper to the wrapper of a smoking article comprising:

applying adhesive to a surface of a continuous web of moving band paper, said band paper having been selected to modify the burn rate of a smoking article when adhered to the wrapper of said smoking article;

cutting the continuous web of band paper into segments

having specified length, said cutting occurring along an axis perpendicular to the direction of travel of the web of band paper;

spacing the segments of band paper a first distance apart from one another;



adhering the segments of band paper to a surface of a continuous web of moving smoking article wrapper, said segments being spaced a second distance apart from one another.

5,191,907

CURLING DEVICE HEAD WITH A HOLDING ELEMENT

Suzy C. Hirzel, 933 Shellwood Way, Sacramento, Calif. 95831

Filed Aug. 20, 1991, Ser. No. 747,704
Int. Cl.[5] A45D *24/30*
U.S. Cl. 132—107 **12 Claims**

1. A hair curling, picking, and brushing device comprising:

a horizontal base having an upper panel and lower panel, a vertical holding element extending perpendicular to and away from said lower panel;

an outer row of teeth and at least one row of inner teeth extending away from said upper panel, said at least one row of inner teeth being of shorter length than the outer row of teeth and located within the perimeter of said outer row of teeth, said outer row of teeth having upper teeth tips and lower teeth ends;

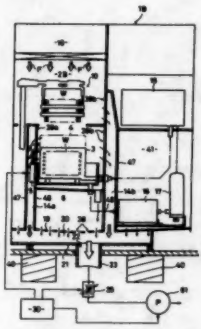
said outer row of teeth being tapered outwardly from a vertical plane as said outer teeth extend from said lower teeth ends to said upper teeth tips and at least said horizontal base, outer row of teeth and said at least one row of inner teeth being molded in one piece; whereby said outer row of teeth are long enough to lift a sufficient amount of hair to use the device as a pick and said at least one row of inner teeth provides a brushing and teasing element.

5,191,908

DIPPING TYPE SURFACE TREATMENT APPARATUS

Toshio Hiroe, and Kenji Sugimoto, both of Shiga, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Japan

Filed Dec. 27, 1991, Ser. No. 815,323
Claims priority, application Japan, Dec. 28, 1990, 2-406312[U]
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—76 **16 Claims**



1. A dipping type wafer treatment apparatus comprising:

a housing having first and second openings through which a wafer can pass, said housing defining a space in which the wafer is treated;

a wafer treatment bath provided inside said housing;

means provided above said housing for producing a downflow of air;

gas flow introducing means provided at an upper part of said housing for introducing said air downflow into said housing;

bottom enclosing means provided below said housing being partitioned from said housing for defining an enclosed spaced in which gas can pass and having an air outlet for gas to outside;

first air guiding means for guiding air in the vicinity of said treatment bath inside said housing into said enclosed space;

means for forcing out the air inside said enclosed space from said air outlet;

air flow guiding means provided in association with said first opening for guiding an air downflow from said air downflow producing means along an outer wall of said housing from a portion above said first opening for forming an air curtain to prevent air inside and outside said housing from mixing with each other; and

means for further guiding the air flow guided by said air flow guiding means into said enclosed space.

5,191,909

TRANSIT MIX TRUCK DUST HOOD ASSEMBLY

Ronald P. Nadeau, Syracuse, and Frank V. Smith, Jr., Marcellus, both of N.Y., assignors to Griffin Environmental Co., Inc., Syracuse, N.Y.

Filed Apr. 3, 1991, Ser. No. 680,160
Int. Cl.[5] E04H *15/14*
U.S. Cl. 135—93 **9 Claims**

1. A dust hood assembly for enclosing a particulate material filling aperture in a truck to capture dust created by the filling operation which comprises:

a generally rectangular top frame member spaced from the ground so as to extend over top of a truck;

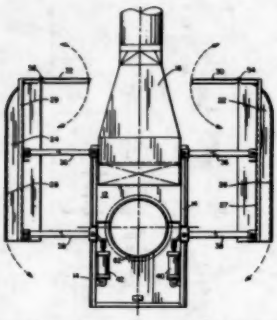
a top panel mounted on said frame member having filling chute and exhaust hood openings therein;

first and second top side panel member pivotally mounted on

said top frame member and extending outwardly therefrom;

first and second side curtain members mounted on the outer edges of said top side panel members and extending downwardly about the sides of a truck parked under said top frame member;

a pair of back curtain members mounted at the back end of said side curtain members generally perpendicularly to said side curtain members to form an end closure for the dust hood assembly;



means for moving said top side panels from a position closely adjacent to the sides of said top frame member to an extended position away from the sides of said top frame member;

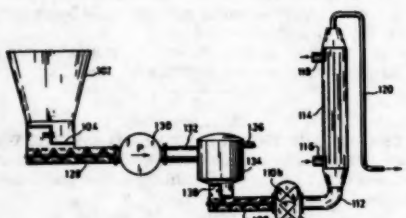
so that when said panels are in the extended position a driver may freely drive a truck under the hood assembly to position the truck for filling, and when the hood assembly is closed about the truck during the filling operation the dust of filling will be captured by an exhaust fan drawing air therefrom.

5,191,910

METHOD AND APPARATUS FOR CONTINUOUS LIQUEFACTION OF GELLED PHOTOGRAPHIC MATERIALS

Donald E. Eaton; James K. Toner, and Daniel J. Wooster, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 14, 1990, Ser. No. 613,422
Int. Cl.[5] F16K *49/00*
U.S. Cl. 137—2 **17 Claims**



1. A method for continuously liquefying a gelled photographic material in granular or chunk form, comprising:

conveying said gelled photographic material in granular or chunk form to a positive displacement pump to keep said positive displacement pump filled with said material;

continuously advancing a substantially undisrupted mass of said material, with said positive displacement pump, into a heat exchanger; and

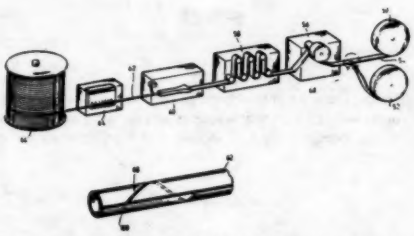
liquefying said material in said heat exchanger.

5,191,911

CONTINUOUS LENGTH OF COILABLE TUBING

Jon D. Dubois, Houston, Tex., assignor to Quality Tubing, Inc., Houston, Tex.

Continuation of Ser. No. 617,429, Nov. 19, 1990, abandoned, which is a continuation of Ser. No. 253,662, Oct. 5, 1988, abandoned, which is a continuation of Ser. No. 29,171, Mar. 18, 1987, Pat. No. 4,863,091. This application Jan. 28, 1992, Ser. No. 825,838
Int. Cl.[5] F16L *9/16*
U.S. Cl. 138—100 **15 Claims**



1. A continuous length of coiled tubing having a means to withstand repeated coiling and uncoiling stresses, said coiled tubing being made by:

(a) trimming a trailing end of a first length of flat strip stock and a leading end of a second length of flat strip stock at supplementary angles wherein one of said supplementary angles is an acute angle;

(b) butting the trimmed ends together so that the ends engage, but do not overlap, to form an angular joint;

(c) welding said separate strips of flat metal end-to-end to form a composite strip with an end weld, said end weld projecting beyond the surfaces of the composite strip;

(d) finishing the composite strip by removing the projecting weldment from the edges and one flat surface of the composite strip such that the edges and the flat surface of the weld conform to a same thickness and width dimension as the remainder of the composite strip and blend smoothly with the edges and the flat surface of the composite strip to thereby enhance the mechanical properties of the composite strip;

(e) forming the finished, composite strip into tubing with the substantially smooth surface of the composite strip as the internal wall surface of the tubing to thereby facilitate uninterrupted fluid flow and mechanical transport in the tubing when fluids or devices are moved through the tubing; and

(f) welding opposing edges of the composite strip tubing to form a longitudinal seam such that the end weld follows a spiral path around the tubing that begins and ends in the longitudinal seam, but never crosses the longitudinal seam, to enhance the non-destructive inspectability of the spiral end weld.

5,191,912

LIQUID LEVEL CONTROLLER

Roy L. McDaniel, P.O. Box 141, Perryton, Tex. 79070

Filed Jan. 10, 1992, Ser. No. 819,485
Int. Cl.[5] F16K *31/34*
U.S. Cl. 137—413 **5 Claims**

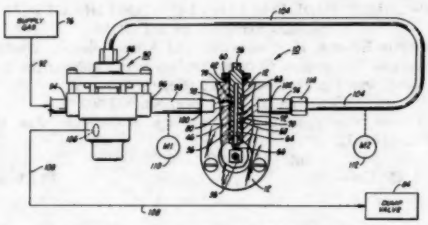
1. Apparatus consisting of a float control valve in combination with a snap-action pilot valve for control of liquid level within a liquid container by providing dump valve actuation without bleeding gas to the external surrounds, comprising:

level sensing means supported from said container and having a vertically pivotable float secured on one end and a snubber head on the other end and extending external of said container such that upward movement of said float causes downward movement of said snubber head;

a control head secured to said level sensing means and defining a reaction space in surround of said snubber head, a central bore extending downward through the control head in communication with said space, and first and second threaded ports in opposite sides of the control head and in communication with said central bore;

an orifice post threadedly secured downward in said central bore, said orifice post having first and second annular grooves spaced therealong and an axial void extending therethrough and terminating in said reaction space adjacent said snubber head as a nozzle; and

first and second transverse ports formed through the orifice post each in communication between respective first and second annular grooves and said axial void, said axial void nozzle being sealed by upward movement of said snubber head when no flotation pressure is present on said float;



a snap action pilot valve having a sample inlet, first and second supply connections, and a diaphragm outlet;

a supply gas of pre-set pressure connected for input to said second supply connection;

first conduit means connecting said first supply connection as output for connection to said control head first threaded port;

a second conduit connecting the control head second threaded port back to the pilot valve sample inlet; and

third conduit means connecting the output from said diaphragm outlet to a dump valve;

whereby commencement of gas release at said nozzle reduces pressure in said second conduit means to said pilot valve sample inlet to actuate the pilot valve and produce an output pressure pulse from the diaphragm outlet to actuate the dump valve.

5,191,913

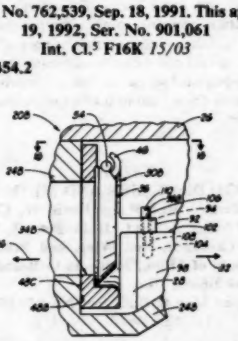
TOP-ENTRY CHECK VALVE WITH PIN FASTENERS

John P. Scaramucci, 10724 Woodridden, Oklahoma City, Okla. 73170

Division of Ser. No. 762,539, Sep. 18, 1991. This application Jun. 19, 1992, Ser. No. 901,061

Int. Cl.[5] F16K *15/03*

U.S. Cl. 137—454.2 **9 Claims**



1. A top entry check valve, comprising:

a valve cartridge assembly, including a seat, cage and disc;

a body having an upstream end, a downstream end, a valve chamber therein communicating with the upstream and downstream ends thereof, and an access opening in a side wall thereof communicating with the valve chamber of a size to accommodate the entry and removal of the valve cartridge assembly therethrough, said body also having an annular shoulder therein facing downstream sized to engage and prevent the valve cartridge from moving upstream;

a bonnet removably attached to the body over said access opening forming a wall of the valve chamber; and

at least one extension protruding downstream from the valve cartridge assembly and having a fastener slot therethrough; and

a pin fastener extending through the fastener slot of each extension of the valve cartridge assembly;

wherein the body has a mating opening corresponding with the fastener slot of each extension of the valve cartridge assembly and wherein each pin fastener extends into the corresponding mating opening to hold the valve cartridge assembly against movement downstream.

5,191,914

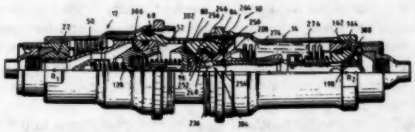
REDUNDANT VALVE DISCONNECT COUPLING

Antonio E. Gonzalez, La Mirada, Calif., assignor to Fairchild Space and Defense Corporation, Germantown, Md.

Filed May 30, 1991, Ser. No. 708,056

Int. Cl.[5] F16L *29/00*

U.S. Cl. 137—614.03 **8 Claims**



1. A fluid coupling comprising a pair of coupling members adapted to engage each other substantially along an axis and to permit fluid flow between the coupling members when they are engaged, at least one of said coupling members comprising a body having a long axis, a plurality of spaced apart valve seats located in said body, a plurality of independent reciprocating valve members located within said body for reciprocal movement substantially along the long axis of said body and positioned to make sealing contact with said spaced apart valve seats located in said body, means associated with said reciprociating valve members and said valve seats for urging said reciprocating valve members and the sealing surfaces of said valve seats into contact when said pair of coupling members are disconnected, means for moving said independent valve members and associated spaced apart valve seats out of contact with each other when said pair of coupling members engage each other and means located in said body for permitting rotational movement of said plurality of spaced apart valve seats and said plurality of independent reciprocating valve members when said pair of coupling members are engaging each other whereby misalignment between said pair of coupling members during engagement can be accommodated.

5,191,915

VISCOUS FLUID SHEAR CLUTCHES AND CONTROL VALVES THEREFOR

Arthur E. H. Elmer, Nailsworth, England, assignor to Kysor Industrial Corporation, Cadillac, Mich.

Division of Ser. No. 461,535, Jan. 5, 1990, Pat. No. 5,042,629. This application Jun. 19, 1991, Ser. No. 717,611

Claims priority, application United Kingdom, Jan. 13, 1989, 8900756; Apr. 11, 1989, 8908129

Int. Cl.[5] F16K *11/04;* **F15B** *13/04*

U.S. Cl. 137—625.27 **5 Claims**

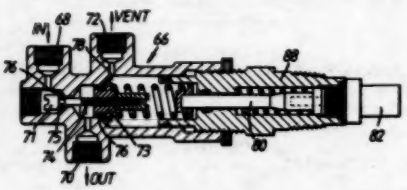
1. A control valve comprising:

a body defining first, second and third ports;

a shuttle spool means movably mounted in said body;

two spaced flow control zones disposed one intermediate said first and second ports and one intermediate said first and third ports for controlling the flow therebetween;

each flow control zone comprising resilient seal means associated with one of said shuttle spool means and said body for cooperating with seal surface means, the other of said shuttle spool means and said body having seal surface means for cooperating with said resilient seal means, each said resilient seal means preventing the respective cooperating seal surface from moving beyond said resilient seal means, thereby constraining movement of said shuttle spool means with respect to said body so that movement of said shuttle spool means in one sense causes said seal surface means in one flow control zone sealingly to displace the associated resilient seal means and causes the seal surface means in the other flow control zone to lift off the



associated resilient seal means to thereby open that flow control zone, whereby movement of said shuttle spool means in one sense causes said first port to be in communication with said second port, and movement in an opposed sense causes said first port to be in communication with said third port;

said control valve modulating an output pressure at said first port, wherein said second port is connected in use to a source of fluid pressure and said third port is connected in use to a vent, and wherein transducer means is provided for moving said shuttle spool means in response to a sensed parameter;

said shuttle spool means including fluid piston means exposed to the output pressure at said first port for urging the shuttle spool means in a first direction tending to allow flow between said first and third ports to vent said output pressure, and a balancing spring urging said shuttle spool means in the opposite direction.

5,191,916

PRESSURE-RESISTANT HELICAL CORRUGATED PIPE

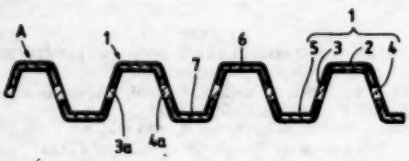
Shiro Kanao, No. 9-18, Nanpeidai 4-chome, Takatsuki-shi, Osaka, Japan

Filed Nov. 22, 1989, Ser. No. 440,170

Claims priority, application Japan, Nov. 26, 1988, 299336

Int. Cl.[5] F16L *9/16, 9/06*

U.S. Cl. 138—173 **6 Claims**



1. A pressure-resistant helical corrugated pipe, the pipe defining a longitudinal axis and comprising:

a helical corrugated pipe wall having a top portion disposed remote with respect to the longitudinal axis of the pipe, a bottom portion disposed close to the longitudinal axis of the pipe, and opposite side wall portions extending from said top portion to said bottom portion; and

belt plates formed separately from each other and made of a thin metal plate; wherein

said belt plates are disposed respectively in said top portion and said bottom portion as constituent elements of said pipe wall for reinforcing said pipe wall;

at least one of said metal belt plates being bent so that opposite edges of said two metal belt plates are disposed in abutted relation without overlap or in spaced opposed relation without overlap in said opposite side wall portions; and

wherein said opposite side wall portions include synthetic resin or rubber connective portions at which said two metal belt plates are connected.

5,191,917

SPREADER TOOL FOR COUPLING AND DECOUPLING HEALD SHAFTS IN A LOOM

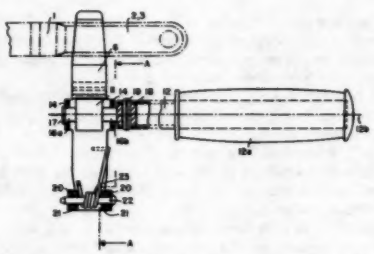
Valentin Krumm, Hergensweiler, and Armin Hiemer, Lindau, both of Fed. Rep. of Germany, assignors to Lindauer Dornier Gesellschaft mbH, Lindau, Fed. Rep. of Germany

Filed Jan. 17, 1992, Ser. No. 822,602

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1991, 4101532

Int. Cl.[5] D03C *13/00, 9/06*

U.S. Cl. 139—380 **10 Claims**



1. A spreader tool for the individual coupling and decoupling of a heald shaft to or from respective drive means in a heald loom, comprising a first spreader jaw and a second spreader jaw forming a pair of spreader jaws, means for journalling said spreader jaws to each other at their ends opposite to a spreading end of said spreader jaws, said journalling means permitting rotation of said spreader jaws about a common axis, means for normally biasing said spreader jaws into a jaws closed position, and drive means for opening said spreader jaws in a direction opposite to an effective direction of said biasing means, said drive means comprising a drive cam (11), a handle secured to said drive cam, and means for mounting said drive cam between said spreader jaws, whereby rotating said handle rotates said drive cam to move said spreader jaws away from each other.

5,191,918

FOOD DISPENSER AND METHOD

Robert L. Cahlander, Red Wing; David W. Carroll, Cannon Falls, both of Minn.; Alfred C. Hollingsworth, Naperville, Ill.; Gregory A. Lawrence, Red Wing, and Brian R. Rudesill, Woodbury, both of Minn., assignors to Restaurant Technology, Inc., Oak Brook, Ill.

Filed May 4, 1990, Ser. No. 519,068

Int. Cl.[5] B65B *1/04, 1/30*

U.S. Cl. 141—1 **40 Claims**

1. A dispenser for dispensing bulk food items into a container comprising:

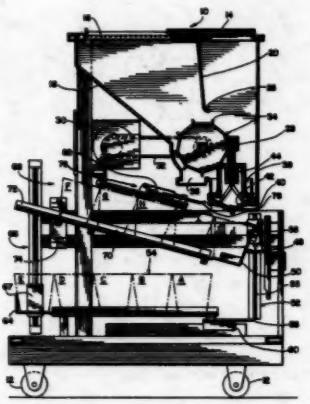
a storage bin for receiving and holding a quantity of bulk food items;

secondary bin receiving means for receiving at least a portion of bulk food items of desired size from said storage bin;

conveyor means for conveying food items from said storage bin to said secondary bin receiving means;

container conveyance means for conveying a container to and from a container filling station along a generally continuous path located within a single substantially vertical plane, said path having at least one horizontal and one vertical component, the container being slidably conveyed on said conveyance means along said horizontal component;

discharge means for dispensing items from said secondary bin means into an empty container at said filling station; and



measuring means for measuring the quantity of food items present in said secondary bin receiving means and initiating the dispensing of food items from said secondary bin receiving means in response to a measured predetermined quantity of food items in said secondary bin receiving means;

wherein said container conveyance means includes means for sequentially accepting a plurality of empty containers, sequentially conveying said empty containers to a filling station, and sequentially discharging filled containers from said filling station; and

wherein said container conveyance means further includes a downwardly inclined ramp for accepting and slidably conveying empty containers towards said filling station.

5,191,919

CLOSED TRANSFER MEANS

Peter S. Barrows, Yardley, Pa., and Clyde D. Watson, San Jose, Calif., assignors to FMC Corporation, Chicago, Ill.

Filed Oct. 18, 1991, Ser. No. 779,217

Int. Cl.[5] B65B *1/04*

U.S. Cl. 141—2 **4 Claims**

1. A closed transfer means for transferring liquid from a container to a dilution tank in measured volume comprising:

a transfer tank;

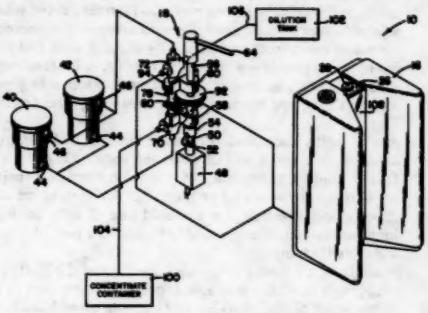
electric pump means having an inlet and an outlet;

valve means connected between said pump means, said tanks and said container;

switch means for activating said pump means;

actuating means movable to first and second positions from a center neutral position in which said pump means, said tanks and said container are isolated from each other;

said actuating means in said first position connecting said inlet to said container and said outlet to said transfer tank, and in said second position connecting said inlet to said transfer tank and said outlet to said dilution tank; and



said actuating means including means to close said switch means when in said first and second positions only.

5,191,920

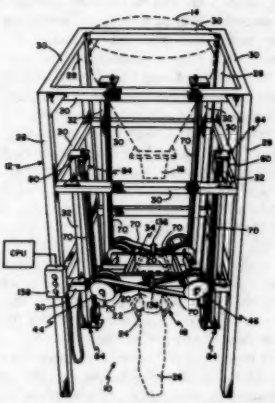
Z-BELT TYPE LIFTING AND STABILIZING MECHANISM FOR VERTICAL BAG FILLING MACHINES

Harold R. McGregor, 645 Riverwood Dr., Owatonna, Minn. 55060

Filed May 1, 1991, Ser. No. 694,457

Int. Cl.[5] B66B *11/04*; B65B *1/04*

U.S. Cl. 141—313 **46 Claims**



1. A lifting and stabilizing apparatus for use in controllably raising and lowering a carriage relative to a frame along a vertical path having a top end and a bottom end, said carriage having a pair of opposing sides between which is measured a width and a pair of opposing ends between which is measured a length, said lifting and stabilizing apparatus comprising:

at least one drive wheel assembly is adapted for, said drive wheel assembly being rotatably mounted on at least one of the pair of opposing sides of the carriage proximate to one of the opposing ends thereof, said drive wheel assembly having a plurality of drive teeth, said drive wheel assembly having a top side and a bottom side generally opposing said top side;

a drive mechanism connected to said drive wheel assembly and capable of selectively rotating said drive wheel assembly at an angular velocity for a selected time interval;

at least one tensioning wheel assembly, said tensioning wheel

assembly is adapted for being rotatably mounted on said one of the pair of opposing sides of the carriage to which said drive wheel assembly is mounted, said tensioning wheel assembly being mounted proximate to an end of the carriage opposing said one end to which said drive wheel assembly is proximate such that said drive wheel assembly is spaced apart from and generally aligned with and confronts said tensioning wheel assembly, said tensioning wheel assembly having a top side and a bottom side generally opposing said top side of said tensioning wheel assembly;

a pair of belts, each said belt being flexible and having a drive surface and a pair of opposing ends, said drive surface defining a multiplicity of belt teeth sized and shaped so as to mesh with and engage said drive teeth on said drive wheel assembly, each of said pair of belts having a longitudinal length measured between said pair of opposing ends thereof;

a plurality of clamping assemblies, each of said plurality of clamping assemblies is adapted for being connected to the frame, each of said plurality of clamping assemblies being capable of engagingly clamping one of said opposing ends of at least one of said pair of belts to maintain said opposing ends of said belts in a substantially fixed position relative to the frame and exert a longitudinal tension on said one of said pair of belts, each of said clamping assemblies being mounted at a height either proximate to or above the top end of the path or proximate to and below the bottom end of the path,

such that a first belt of said pair of belts extends from one of said plurality of clamping assemblies generally adjacent the bottom end of the path upwardly and at least partially around said top side of said drive wheel assembly and toward said tensioning wheel assembly generally along the length of the carriage, said first belt further extending at least partially around said bottom side of said tensioning wheel assembly and upwardly to one of said plurality of clamping assemblies generally adjacent to the top of the path, and such that a second belt of said pair of belts extends from one of said plurality of clamping assemblies generally adjacent the top end of the path downwardly and at least partially around said bottom side of said drive wheel assembly and toward said tensioning wheel assembly generally along the length of the carriage, said second belt further extending at least partially around said top side of said tensioning wheel assembly and downwardly to on of said plurality of clamping assemblies generally adjacent to the bottom of the path,

whereby the drive mechanism may be selectively actuated to cause the drive wheel assembly to rotate a number of revolutions, the rotation of the drive wheel assembly causing the drive wheel assembly to move along and relative to both the drive surface of the first belt and the drive surface of the second belt thereby causing the carriage to be raised or lowered a linear distance along the path, said linear distance being directly proportional to said number of revolutions of the drive wheel assembly, the first belt and the second belt being maintained under sufficient longitudinal tension by the clamping assemblies, the drive wheel assembly, and the tensioning wheel such that the first belt and the second belt hold and constrain the carriage in a predetermined horizontal orientation.

5,191,921

ADJUSTABLE DEPTH OF CUT STOP MECHANISM FOR A PLUNGE TYPE ROUTER

Ronald C. McCurry, West Union, S.C., assignor to Ryobi Motor Products Corp., Easley, S.C.

Filed Oct. 18, 1991, Ser. No. 779,074
Int. Cl.[5] B23C *1/20*; B27C *5/10*
U.S. Cl. 144—134 D **6 Claims**

1. A plunge type router comprising:

a motor housing with a drive motor secured therein, said drive motor having a shaft extending outwardly from the lower end of said motor housing and adapted to have a cutting tool secured thereto;

a base plate displaceable substantially vertically relative said motor housing;

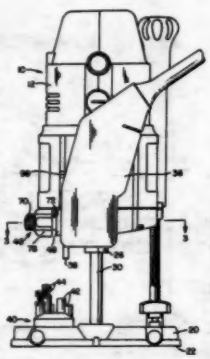
means for judging the displacement of said base plate relative said motor housing;

abutment means mounted on said base plate; and

depth stop means mounted on said motor housing for cooperating with said abutment means to limit the relative displacement of said base plate toward said motor housing, said depth stop means including:

a stop bar;

means for supporting said stop bar on said motor housing for vertical displacement in interfering relationship with said abutment means;



a toothed rack on said stop bar;

a pinion gear;

a shaft having first and second ends with said pinion gear secured to said shaft first end;

a knob secured to said shaft second end;

means for selectively engaging and disengaging said rack and said pinion gear;

means for rotating said pinion gear to adjust the vertical displacement of said stop bar when said rack and said pinion gear are engaged; and

lock means surrounding said shaft between said pinion gear and said knob for selectively locking said stop bar in a desired position on said motor housing.

5,191,922

TWO-ON-ONE SNAP, SELF INSTALLING AND SUPPORTING CURTAIN AND VALANCE ASSEMBLY

Debra A. Wade, 4204 Palm Dr., Knoxville, Tenn. 37914

Filed Feb. 7, 1992, Ser. No. 832,737
Int. Cl.[5] A47H *1/00*
U.S. Cl. 160—124 **6 Claims**

1. A self-supporting curtain and valance assembly for direct mounting onto a conventional, transverse curtain or drapery rod installed at an installation area over a window, door or the like, and having front and back portions, the front portion of a curtain rod so installed facing away from an installation area and the back portion of a curtain rod facing toward an installation area, said curtain and valance assembly comprising:

a curtain subassembly having flap and bottom end portions and inside and outside surfaces, said curtain subassembly comprising:

a first coupling means attached to the inside surface of said flap end of said curtain along a first common plane portion,

a second coupling means attached to the inside surface of said flap end along a second common plate portion spaced from said first common plate portion and parallel thereto,

wherein said flap can be loopably engaged around a transverse curtain rod and the first coupling means can be attached to the second coupling means bringing the two inside common plane portions together for loopably self-supporting the curtain on a curtain rod, and

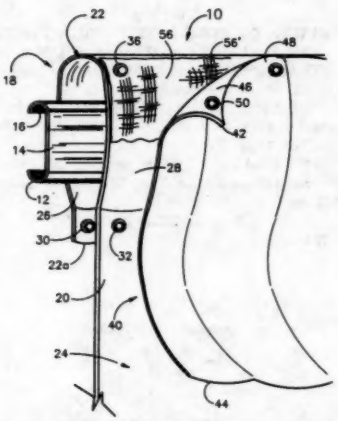
a third coupling means attached to the outside surface of said flap along a third common plane portion parallel to said first and second common plane portions and facing in a direction away from an installation area where a curtain rod is installed when said flap is loopably engaged around a curtain rod;

a valance subassembly having top and bottom sections and inside and outside surfaces, said top section being substantially equivalent in transverse dimensions to the flap end portion of said curtain subassembly,

said valance comprising a fourth coupling means attached to the inside surface of said top section along a fourth common plane portion,

whereby the fourth coupling means can be attached to the third coupling means such that the valance is attachably supported by the curtain substantially parallel to an installed transverse curtain rod, and the outside surface of said valance faces away from an installation area,

each of said coupling means being a reciprocal component of a two part snap combination means, said first and second



coupling means means being a first snap combination means, and said third and fourth coupling means being a second snap combination means;

a porous surface member having a plurality of pores therein, and having transverse substantially equivalent to the flap end portion of said curtain, said porous surface being fixedly attached to a transverse portion of the outside surface of said flap such that when the flap is loopably engaged around a curtain rod the porous surface faces away from an installation area, said porous surface covering said third coupling means and allowing said third and fourth coupling means to attach to one another through the pores of said surface element when said valance is supportably attached to said curtain; and

a shear subassembly, said shear having flap and bottom sections and inside and outside surfaces, said flap having a top transverse end, said subassembly comprising:

a first snap-coupling means attached to the inside surface of said flap section along a first common axis, proximate to the top transverse end of said flap; and

a second snap-coupling means attached to the inside surface of said flap along a second common axis, spaced from and parallel to the first common axis,

whereby the flap section of said shear can be loopably engaged around a transverse curtain rod for self-support thereon, and the flap end portion of said curtain can be loopably engaged around a same curtain rod and said shear installed thereon, and attached to itself for self-support by said first and second coupling means of the curtain which attach to one another through the shear constructed of said flexibly tractable substance, such that the surfaces of the shear pressed between the coupling means are molded to fit securely therein, between said means, without interfering with the attachment of said coupling means and the support of said curtain and said shear;

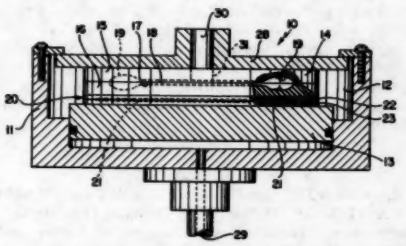
said curtain subassembly being constructed from material selected from a group consisting of antique satin, 70 percent polyester/30 percent cotton, 100 percent polyester, 70 percent polyester/27 percent to 30 percent rayon/1 percent to 3 percent cotton and 35 percent rayon/60 percent coloray acetate with rubber or cotton backing, other polyester, cotton, satin, rayon and coloray acetate combinations, other flexible fabric material and other flexible fabric material and other flexible, pliant substances.

5,191,923

IMPROVED USE OF SELF-LEVELING SHIMS IN CENTRIFUGAL APPARATUS

Douglas J. Goss, North Kingstown, R.I., assignor to Conley Casting Supply Corp., Warwick, R.I.

Filed Mar. 1, 1991, Ser. No. 664,594
Int. Cl.[5] B22D *10/10*
U.S. Cl. 164—292 **3 Claims**



1. In centrifugal casting apparatus of the type comprising a housing, a clamping piston mounted in said housing for receiving thereon an elastomer mold comprising face-to-face mold halves having cooperating mold cavities on their abutting inner surfaces, and a fixed cover engaging the top of said mold whereby movement of said piston toward said cover causes clamping of said mold halves against each other, the improvement comprising a shim located between said piston and said mold to compress the latter at selected locations to close any gap between said abutting surfaces, said shim comprising a hollow inflatable circular bladder having opposed walls secured to each other at selected locations to define a predetermined pattern of unsecured inflatable portions, and fluid means within said bladder that automatically migrates within the confines of said pattern to the location where any such gap exists, said shim being an integral part of one of said mold halves.

5,191,924

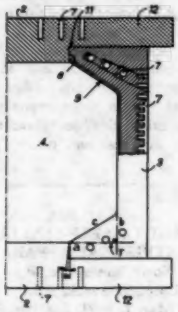
BUILT-UP INGOT MOLD FOR THE CONTINUOUS CASTING OF METAL

Dominique Werquin, Ronchin, France, assignor to Sollac, Paris and Clecim, Pontoise, both of France

Filed Jul. 18, 1990, Ser. No. 554,704
Claims priority, application France, Jul. 19, 1989, 89 09731
Int. Cl.[5] B22D *11/00*
U.S. Cl. 164—418 **4 Claims**

1. A built-up ingot mold for the continuous casting of metal, said mold comprising a large pair and a small pair of opposed

cooled plates (2,3; 2,30), said large and small pairs of opposed plates deliminting between them a cavity (4), said cavity having corners, said corners being cut by bevels (9), said large pair of opposed plates bearing on corresponding bearing faces (8) of said small pairs of opposed plates (2), said large and small pairs of opposed plates (2,3; 2,30) being intended to be tightened against one another by tightening devices (10) acting approximately perpendicularly to said bearing faces (8), each of said bevels and corners forming a right triangle, each of said right



triangles having a hypotenuse, a large side, and a small side, characterized in that said bevel comprises said hypotenuse, said large side being located in a plane of an inner wall of each of said large plates, said small side being located in a plane of an inner wall of each of said small plates, said small side having a length not equal to a length of said large side, said length of said small side being greater then 30 mm characterized in that the sides forming the right angle of the right-angled triangle are, respectively, equal to 80 and 50 mm for slabs which are 300 mm thick.

5,191,925

ROLL FOR A DEVICE FOR THE DIRECT CONTINUOUS CASTING OF THIN STRIPS OF MOLTEN METAL

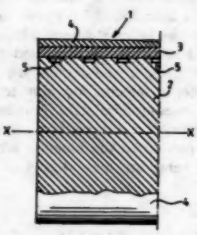
Laurent Sosin, Fameck, France, assignor to Usinor Sacilor, Puteaux, France

Continuation-in-part of Ser. No. 591,292, Oct. 1, 1990, abandoned. This application Jan. 9, 1992, Ser. No. 818,784

Claims priority, application France, Oct. 2, 1989, 89 12855

Int. Cl.[5] B22D *11/06*

U.S. Cl. 164—428 **16 Claims**



1. An apparatus for the direct continuous casting of thin strips of molten metal, comprising:

a source of molten metal; and

at least one cooled roll which receives the molten metal to be solidified, said at least one roll having a longitudinal axis around which it rotates, said at least one roll comprising:

a cylindrical inner core having a longitudinal axis,

a first sleeve enclosing said inner core, said first sleeve having a longitudinal axis parallel to the axis of said core, cooling channels provided between said first sleeve and the core, and

a second sleeve enclosing said first sleeve and being in contact with the molten metal, said second sleeve having a longitudinal axis parallel to the longitudinal axis of said first sleeve and the longitudinal axis of said core and forming, with said first sleeve, two superposed cylindrical layers which are chosen of materials such that said first sleeve has a coefficient of thermal expansion higher than that of said second sleeve, wherein the thicknesses of said first and second sleeves are chosen, in relation to the thermal conductivity and coefficient of thermal expansion of the materials from which the sleeves are formed, so as to reduce, when said apparatus is in use, the difference between an axial expansion of said first sleeve along its longitudinal axis, which first sleeve is maintained at a low temperature by a circulating cooling fluid in said cooling channels, and an axial expansion of said second sleeve along its longitudinal axis, which second sleeve is maintained at a high temperature due to its contact with the molten metal.

5,191,926

DEVICE FOR SLAG-FREE POURING WITH CONTINUOUS CASTING MACHINES

Bernhard Tinnes, Zollikerberg, Switzerland, assignor to Metacon AG, Zürich, Switzerland

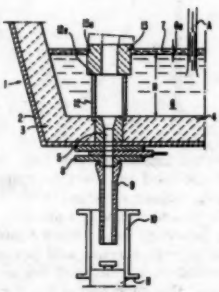
PCT No. PCT/EP90/01025, § 371 Date Mar. 6, 1991, § 102(e) Date Mar. 6, 1991, PCT Pub. No. WO91/00788, PCT Pub. Date Jan. 24, 1991

PCT Filed Jun. 27, 1990, Ser. No. 659,334

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1989, 3922549

Int. Cl.[5] B22D *11/10*

U.S. Cl. 164—437 **18 Claims**



1. A device for the slag-free discharge of molten material through a discharge orifice in the bottom of a vessel, said device comprising:

a starting pipe to be positioned about the discharge orifice at the vessel bottom to extend upwardly therefrom;

a starting member separate from said starting pipe and loosely positioned with respect thereto such that molten material initially introduced into the vessel is blocked from access into said starting pipe and to the discharge orifice; and

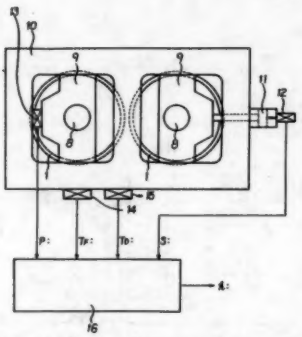
said starting member having a buoyancy in the molten material such that when the level of molten material in the vessel reaches a determined level said starting member is lifted relative to said starting pipe, thereby providing access of the molten material into said starting pipe and to the discharge orifice.

5,191,927

METHOD AND APPARATUS FOR DETECTING A SHEET THICKNESS IN A CONTINUOUS CASTING MACHINE

Sadamu Terado; Hidenori Hattori, both of Hiroshima; Yoshio Morimoto, and Yasuhiro Yamakami, both of Futtsu, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha and Nippon Steel Corporation, both of Tokyo, Japan

Filed Nov. 22, 1991, Ser. No. 796,327
Claims priority, application Japan, Nov. 22, 1990, 2-315826
Int. Cl.[5] B22D *11/06, 11/16*
U.S. Cl. 164—452 3 Claims



1. A method for detecting a sheet thickness in a twin-drum type continuous casting machine including a pair of drums having rotary shafts supported in parallel to each other from a pair of frames via chocks and rotating in the opposite directions to each other with a gap space held therebetween, and a depressing device for said drums, in which machine a thin sheet is cast by pouring molten metal into the gap space between said drums; comprizing the steps of calculating a distance of said gap space by detecting a depressed position from said depressing device, further calculating a correction value for said gap space distance from a deflection of said frame by detecting a depressing force of said depressing device, calculating a correction value for said gap space distance from a thermal deformation of said frame by detecting a temperature of frame coolant water of said frame, calculating a correction value for said gap space distance from a thermal deformation of said drums by detecting a temperature of drum coolant water of said drums, correcting said calculated gap space distance with said respective calculated correction values, and thereby detecting the sheet thickness of the thin sheet, which is being cast.

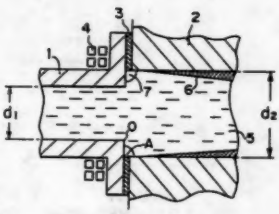
2. An apparatus for detecting a sheet thickness in a continuous casting machine; comprizing a pair of frames adapted to be cooled by coolant water, a pair of drums respectively having rotary shafts supported in parallel to each other from said frames via chocks and adapted to be rotated in the opposite directions to each other with a gap space held therebetween and to be cooled by coolant water, a depressing device provided on said frames for depressing said drums, a depressed position detector provided in said depressing device for detecting a depressed position, a depressing force detector provided on said frames for detecting a depressing force of said drums, a frame coolant water temperature detector provided on said frames for detecting a temperature of the frame coolant water, a drum coolant water temperature detector provided on said frames for detecting a drum coolant water temperature of said drums, and a computing unit responsive to the outputs of said depressed position detector, said depressing force detector, said frame coolant water temperature detector and said drum coolant water temperature detector for calculating a sheet thickness of the sheet which is being cast.

5,191,928

METHOD FOR CONTINUOUS CASTING OF STEEL AND APPARATUS THEREFOR

Toshio Sato; Shunichi Sugiyama; Toshio Ishii; Masayuki Nakada; Takashi Oosako, and Kentaro Mori, all of Kawasaki, Japan, assignors to NKK Corporation, Tokyo, Japan

Filed Nov. 26, 1991, Ser. No. 798,506
Claims priority, application Japan, Nov. 27, 1990, 2-324601
Int. Cl.[5] B22D *11/06, 27/02*
U.S. Cl. 164—466 14 Claims



1. A method for continuous casting of steel, comprising the steps of:

feeding molten steel to cooling means for cooling molten steel by use of feeding means for feeding molten steel, said feeding means being followed by said cooling means;

cooling fed molten steel by said cooling means;

generating a high-frequency magnetic field near a zone where said feeding means, said cooling means and molten steel contact each other; and

converging said high-frequency magnetic field on the zone where said feeding means, said cooling means and molten steel contact each other.

8. An apparatus for continuous casting of steel, comprising:

feeding means for feeding molten steel;

cooling means for cooling molten steel fed by said feeding means, said feeding means being followd by said cooling means;

generating means for generating a high-frequency magnetic field near a zone where said feeding means, said cooling means and molten steel contact each other; and

converging means for converging the magnetic field on the zone where said feeding means, said cooling means and molten steel contact each other.

5,191,929

MOLTEN METAL SUPPLYING APPARATUS

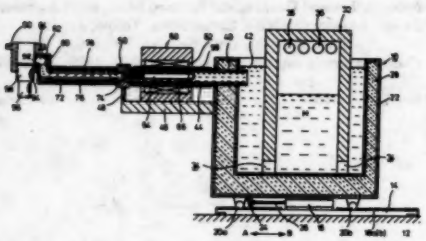
Shoko Kubota, and Sadayoshi Yamada, both of Zama, Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP88/00530, § 371 Date Jan. 5, 1990, § 102(e) Date Jan. 5, 1990, PCT Pub. No. WO89/00469, PCT Pub. Date Jan. 26, 1989
PCT Filed May 30, 1988, Ser. No. 449,913
Claims priority, application Japan, Jul. 9, 1987, 62-171927; Jul. 9, 1987, 62-171928
Int. Cl.[5] B22D *39/00*
U.S. Cl. 164—500 12 Claims

11. A method for supplying molten metal from an apparatus having a constant-level molten metal holding furnace; a substantially linear molten metal feed tube for feeding molten metal from the constant-level molten metal holding furnace to a molten metal receiving member, an electromagnetic pump disposed in said molten metal feed tube, and an adapter disposed between a tip end of said molten metal feed tube and the molten metal receiving member including an injection sleeve and said adapter having a molten metal feed passage capable of keeping a surface level of molten metal therein at a position higher than said molten metal feed tube, the method steps comprising:

filling said molten metal feed tube with molten metal; and

actuating said electromagnetic pump, while filling said molten metal feed tube, to discharge the molten metal from



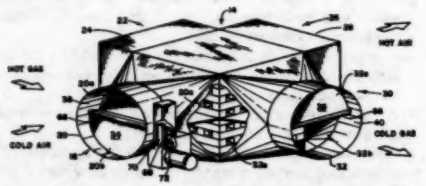
the molten metal feed tube to said molten metal receiving member.

5,191,930

HEAT REGENERATOR

Ross P. Chaney, 5233 W. Timberwood Dr., Newburgh, Ind. 47630

Filed May 20, 1991, Ser. No. 702,966
Int. Cl.[5] F28D *17/02*
U.S. Cl. 165—4 **7 Claims**



1. A heat regenerator comprising an outer encasing means, said encasing means including means for forming at least two fluid input openings and at least two fluid output openings,

different said input and output openings forming part of two different continuous fluid flow paths directionally substantially straight through said encasing means,

said different flow paths also formed by at least a first and second discrete fluid path system and wherein said different flow paths have a cross relationship to each other in said fluid path systems sufficient to effect a heat transfer through said fluid path systems from one fluid path system to the other fluid path system,

valve means for selectively opening and closing each said different flow path of said fluid path systems,

said valve means include means for alternately opening a portion of an associated said opening and at the same time closing a different portion of the same said associated opening,

a cooperative one of said input and output openings associated with said first fluid path system receiving and discharging, respectively, a first fluid to which heat is to be transferred,

a cooperative one of said input and output openings associated with said second fluid path system receiving and discharging, respectively, a second fluid which is to surrender heat,

means in said fluid path systems through which said flow paths pass for providing mass storage and heat transfer for said fluids,

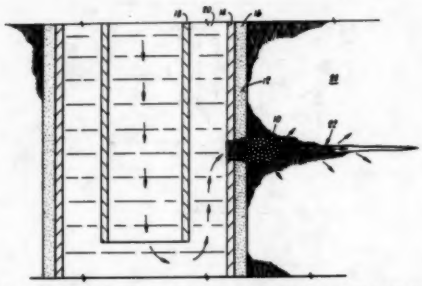
the relationship of said different flow paths being such that said first fluid passing through said first fluid path system is exposed to the heat of said second fluid path system, through which said second fluid passes, upon selectively positioning of said valve means in a manner to effect a substantial continuous transfer of heat from said second fluid through said mass storage and heat transfer means to said first fluid on the continuous flow of said fluids into said input openings.

5,191,931

FLUID LOSS CONTROL METHOD

Ronald E. Himes, and Walter R. Dill, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Sep. 24, 1991, Ser. No. 765,076
Int. Cl.[5] E21B *43/27, 43/28*
U.S. Cl. 166—282 **20 Claims**



1. A method of substantially stopping fluid loss into a subterranean formation from a well bore penetrating the formation by way of at least one perforation extending from the well bore into the formation comprising the steps of:

introducing a first particulate solid material which is soluble in a selected solvent into said well bore and into said formation by way of said perforation, said first particulate solid material having a particle size such that it bridges on the face of said formation and fills said perforation but allows fluid flow therethrough;

thereafter introducing a second particulate solid material which is soluble in a selected solvent into said well bore, said second particulated solid material having a smaller particle size than said first particulate solid material whereby it bridges on said first solid material and forms a fluid flow barrier over said perforation within said well bore; and

subsequently removing said first and second particulate solid materials from said well bore, said perforation and the face of said formation by flowing at least one solvent for said particulate solid materials through said well bore into contact with said second particulate solid material therein whereby said barrier over said perforation within said well bore is dissolved and said solvent flows through said perforation into said formation and dissolves said first particulate solid material therein.

2. The method of claim 1 wherein said first and second particulate solid materials are introduced into said well bore, perforation and formation as suspensions in one or more carrier liquids in which said particulate solid materials are not soluble.

5,191,932

OILFIELD CEMENTING TOOL AND METHOD

Douglas Seefried, 1602 Summit Street, S.W., Calgary, Alberta, Canada T3C 2M1 , and Vernon E. Stone, #30, 185 Woodridge Drive, S.W., Calgary, Alberta, Canada T2W 3X7

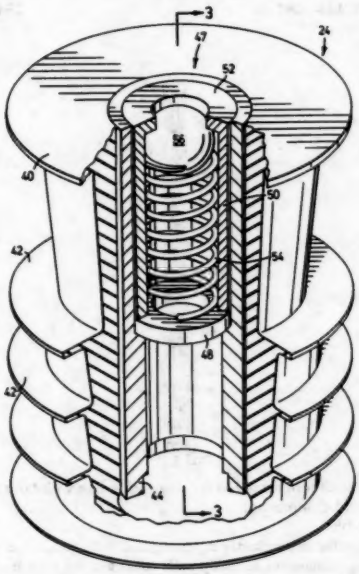
Filed Jul. 9, 1991, Ser. No. 727,080
Int. Cl.[5] E21B *33/16, 34/10*
U.S. Cl. 166—291 **16 Claims**

1. A cementing tool for placement in a well casing between a slug of cement and a secondary fluid pumped into the casing during the cementing operation thereof, said cementing tool comprising:

a generally cylindrical body having an outer surface for sealing engagement with the interior wall of said well casing and having an interior passage therethrough; and

pressure actuated valve means within said passage, wherein in normal operation, said pressure actuated valve means is in a condition to block said passage to allow said cementing tool to force cement down said well casing under the pressure of said secondary fluid, said pressure actuated valve means being actuable to an open condition under increased downward pressure not normally encountered during said normal operation and when a pressure differential equal to approximately 80% of the burst pressure of said casing is placed thereon to permit cement thereabove to pass through said cementing tool via said passage if said cementing tool is placed in said well casing before said cement.

7. In a well cementing method wherein top and bottom cementing tools are in a well casing above and below a desired amount of cement and fluid is pumped into the casing at a first



pressure on top of the top cementing tool to move the top and bottom cementing tools and the cement to the bottom of the casing, the bottom cementing tool allowing cement to pass therethrough and out of the casing when its downward movement is inhibited adjacent the bottom of the casing while the fluid is being pumped into the casing at the first pressure to cause the top plug to move towards the bottom plug, the improvement comprising:

providing a valve mechanism in the top cementing tool which is maintained in a closed condition at the first pressure but which is conditioned to an open condition at an increased pressure; and increasing the pressure of the fluid being pumped into the casing to actuate the valve mechanism to the open condition if the top cementing tool is placed in the casing below the desired amount of cement and another cementing tool is placed in the casing above the desired amount of cement, the valve mechanism allowing cement to pass therethrough and be expressed from the casing.

5,191,933

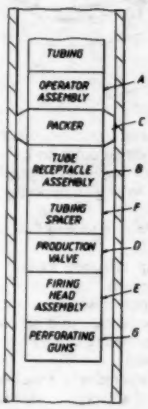
WELLBORE APPARATUS INCLUDING A RATHOLE PRESSURE BALANCED-DIFFERENTIAL PRESSURE FIRING SYSTEM

A. Glen Edwards, Hockley; Klaus B. Huber; Joe C. Hromas, both of Sugar Land, all of Tex.; Antoni K. L. Miszewski, Budleigh Salterton, England, and William M. Hill, Pearland, Tex., assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed May 1, 1992, Ser. No. 877,340

Int. Cl.[5] E21B *43/1185, 34/10*

U.S. Cl. 166—297 **10 Claims**



1. A firing system adapted to be disposed below a packer in a wellbore, said packer defining a rathole annulus below said packer and another annulus above said packer, comprising:

first means for defining a first hydraulic passage between said rathole annulus and one end of said firing system;

second means for defining a second hydraulic passage between said rathole annulus and another end of said firing system, said firing system being rathole pressure balanced when the ends of said firing system are open to said rathole annulus;

third means for defining a third hydraulic passage between said another end of said firing system and said another annulus above said packer; and

fourth means responsive to a first pressure in the annulus above said packer for closing said second hydraulic passage and opening said third hydraulic passage in response to said first pressure when said packer is set and said first pressure in the annulus above said packer is greater than a second pressure in said rathole annulus.

9. A method of safely locating a firing system in a wellbore, said firing system being located in said wellbore when a packer connected above said firing system in said wellbore is set thereby isolating a rathole annulus below said packer from an annulus above said packer, said firing system including a firing apparatus, comprising the step of:

opening a top end and a bottom end of said firing apparatus to said rathole annulus when said firing system is initially disposed in said wellbore, said firing apparatus being pressure balanced at a rathole pressure when the top and bottom ends of said firing apparatus are open to said rathole annulus; and

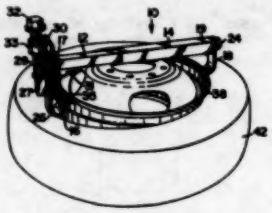
maintaining the top end and the bottom end of said firing apparatus open to said rathole annulus until said packer is set in said wellbore and a pressure in said annulus above said packer is increased to a point which exceeds a pressure in said rathole annulus.

5,191,934

PORTABLE TIRE BEAD BREAKER APPARATUS

Dale L. Wicklund, P.O. Box 431, Deer River, Minn. 56636

Filed May 27, 1992, Ser. No. 889,483
Int. Cl.[5] B60C *25/06*
U.S. Cl. 157—1.17 20 Claims



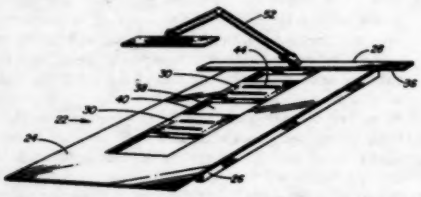
1. A tire bead breaker apparatus, comprising:
(a) a first tube having an outer end;
(b) a second tube telescopically engaged with said first tube, said second tube having an opposing end to said first tube outer end;
(c) a first clamp attached to said first tube at said outer end thereof;
(d) a second clamp attached to said second tube at said opposing end thereof;
(e) an upstanding power screw cooperatively disposed on said first tube outer end, said screw threaded vertically through a nut attached to a face plate disposed on said first tube outer end; and
(f) a breaker foot operatively attached to said screw at a lower end thereof adjacent to said first clamp;
wherein said breaker foot is displaceable in a perpendicular direction to said first and second tubes by movement of said power screw for pushing down upon a bead of a tire mounted on a wheel rim.

5,191,935

UNIVERSAL TABLE-TOP JIG FOR TABLE-MOUNTED POWER TOOLS

James N. McCombie, 5273 Gertrude Street, Port Alberni, British Columbia, V9Y 6L1, Canada

Filed Mar. 13, 1992, Ser. No. 851,474
Int. Cl.[5] B27B *5/18*; B27C *9/02*; B27H *1/00*
U.S. Cl. 144—286 R 17 Claims



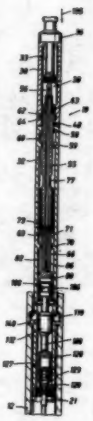
9. A table-top jig for a power tool mounted to a table-top, said jig comprising:
(a) a first planar member having a planar surface at least as large as the surface of said table-top;
(b) means for snug, slidable mating of said first member over said table-top;
(c) a second member mounted upon and transversely across one end of said first member; and,
(d) means for releasably securing said first member in fixed relation to said table-top,
wherein:
(e) said means for snug, slidable mating of said first member over said table-top comprises parallel guide rails mounted to said first member for constraining said first member to said slidable mating over said table-top in a direction perpendicular to a plane containing a power tool blade protruding vertically through said table-top;
(f) said first member has an aperture therein for free passage of said blade through said aperture as said first member is slidably moved over said table-top; and,
(g) said means for releasably securing said first member is releasably securable to allow sliding movement of said first member to a selected position relative to said table-top.

5,191,936

METHOD AND APPARATUS FOR CONTROLLING A WELL TOOL SUSPENDED BY A CABLE IN A WELLBORE BY SELECTIVE AXIAL MOVEMENTS OF THE CABLE

A. Glen Edwards, Hockley; Klaus B. Huber, Sugar Land, and Antoni K. L. Miszewski, Missouri City, all of Tex., assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed Apr. 10, 1991, Ser. No. 684,083
Int. Cl.[5] E21B *43/116*
U.S. Cl. 166—297 25 Claims



1. A well tool arranged for suspension in a well bore from a cable and comprising:
a body;
means for dependently coupling said body to a cable including a mandrel telescopically arranged on said body and operable only after said body has been stationed at a selected depth location in said well bore for being shifted between a first position and a second position in response to a first movement and a second movement of said cable coupled to said mandrel;
an anchor on said body cooperatively arranged to be moved into and out of engagement with a well bore wall;
actuating means selectively operable when said body has been stationed at said selected depth location for engaging said anchor with said well bore wall in response to said first movement of said cable coupled to said mandrel shifting said mandrel to its said second position and for subsequently disengaging said anchor from said well bore wall in response to said second movement of said cable coupled to said mandrel shifting said mandrel to its said first position;
an inpact-actuated explosive on said body;
explosive-detonating means on said body including a movable detonating member, and biasing means operable for forcibly moving said detonating member against said

impact-actuated explosive to achieve a high-order detonation thereof; and

means releasably securing said detonating member to said body and operable for releasing said detonating member to be forcibly moved by said biasing means against said impact-actuated explosive solely in response to an interim first movement of a cable coupled to said mandrel applying a force of a predetermined magnitude to said mandrel during a selected time interval between an initial and a final cable movement.

17. A method for completing a cased well bore comprising the steps of:

setting a perforating gun having an actuating detonator at a selected depth location in said well bore for positioning said actuating detonator where it is accessible from the surface;

coupling a suspension cable to a wireline tool carrying an impact-actuated explosive charge and including a selectively-releasable pressure-responsive actuator cooperatively arranged in the body of said wireline tool for successive movements therein in a first travel span without restraint and in a second travel span, extendible tool-anchoring means coupled to said actuator and detonating means including a selectively-releasable firing pin coupled to said actuator;

lowering said suspension cable and wireline tool into said well bore for stationing said wireline tool therein where said impact-actuated explosive charge is in detonating proximity of said actuating detonator on said perforating gun;

moving said suspension cable downwardly for releasing said pressure-responsive actuator for movement in its said first travel span to extend said tool-anchor means; and

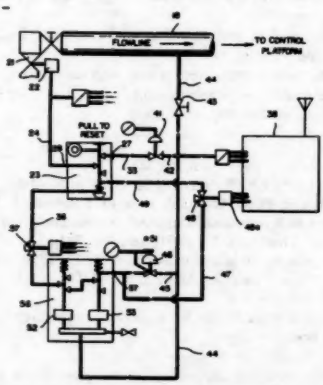
moving said suspension cable upwardly for releasing said pressure-responsive actuator for movement in its said second travel span to release said firing pin for striking said impact-actuated explosive charge to set off said actuating detonator on said perforating gun.

5,191,937

OFFSHORE WELL REMOTE CONTROL SYSTEM

Fred R. Cook, Sr., Pearl River, La., assignor to Texaco Inc., White Plains, N.Y.

Filed Feb. 22, 1991, Ser. No. 659,781
Int. Cl.[5] E21B *34/04*
U.S. Cl. 166—363 **11 Claims**



1. A combination with a subterranean well for producing a pressurized fluid stream, which well includes a flow line for conducting said fluid stream to the surface, a main valve in said flow line having a main valve actuator associated therewith for adjusting said main valve to opened and closed positions, of

a flow control system for adjusting said main valve to open position subsequent to closing thereof under an emergency or elective condition, including:

means for establishing initial communication between said main valve actuator and said flow line in response to a remotely transmitted signal, whereby to provisionally open said main valve to fluid flow,

means for maintaining said initial communication during a predetermined time interval to allow fluid pressure in said flow line to stabilize to a level within a desired operating flow pressure range, and

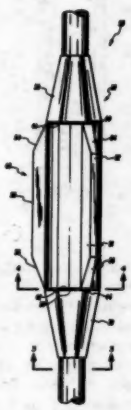
pressure sensing means communicated with said main valve actuator to disestablish communication between said main valve actuator and said flow line subsequent to lapse of said predetermined time interval, in the event the pressure in said flow line fails to stabilize within the desired operating flow pressure range.

5,191,938

ROD GUIDE ASSEMBLY AND METHOD OF ITS INSTALLATION ON A ROD SHANK

Donald E. Sable, 4301 Edmondson, Dallas, Tex. 75205, and Donald E. Sable, II, 3400 Santa Monica, Denton, Tex. 76205

Filed Dec. 16, 1991, Ser. No. 807,601
Int. Cl.[5] E21B *17/10*
U.S. Cl. 166—378 **10 Claims**



1. A sucker rod guide assembly for the shank of a sucker rod positionable in a well tubing, said assembly including: a centralizer mount having a tubular body on and rigid with the shank of a sucker rod, said body having an elongate bushing portion having a tubular surface concentric with the longitudinal axis of the rod and end portions at opposite ends of said bushing portion extending radially outwardly of said bushing portion, said end portions having spaced facing annular stop shoulders; and a tubular centralizer rotatably disposed on said body about said bushing portion and between said stop shoulders, said stop shoulders limiting longitudinal movement of said centralizer on said bushing portion, said centralizer having a tubular body having annular opposite end surfaces engageable with said annular stop shoulders and tubing engageable means extending from said tubular body radially outwardly of said annular stop shoulders of said mount.

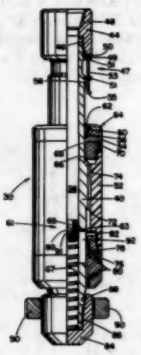
8. A method of installing a rod guide assembly on the shank of a sucker rod including: moulding on the shank a centralizer mount having a longitudinal cylindrical bushing portion and spaced facing annular stop shoulders extending outwardly from opposite ends of said bushing portion; positioning an elongate centralizer having a central bore and a longitudinal slit opening to said bore about said bushing portion and be-

tween said stop shoulders by resiliently outwardly flexing portions of said centralizer from said slit and moving said centralizer onto said bushing portion until said bushing portion is positioned in said central bore.

5,191,939
CASING CIRCULATOR AND METHOD

Charles O. Stokley, Houston, Tex., assignor to TAM International, Houston, Tex.

Related U.S. Application Data Continuation-in-part of Ser. No. 460,566 Jan 3, 1990, Pat. No. 4,997,042.
Filed Mar. 1, 1991, Ser. No. 663,322
Int. Cl.[5] E21B *33/04*
U.S. Cl. 166—379 **19 Claims**



1. An improved method of circulating fluid through a casing string and from a lowermost end of a casing string into a well bore for facilitating lowering of the casing string into a well bore, an uppermost end of the casing string extending above the rig floor to a position adjacent an elevator for grasping the uppermost end of the casing string and moving the casing string axially with respect to the rig floor, the elevator being supported from bails extending from a traveling block of the rig, the method comprising:

providing a casing circulator having an exterior sealing member and an interior packer tube defining a flow path therein;

providing a casing circulator guide for engagement with the bails to guide the position of the casing circulator with respect to the uppermost end of the casing string as the traveling block is lowered;

supporting the casing circulator from the traveling block;

lowering the traveling block with respect to the uppermost end of the casing string such that the casing circulator will be positioned within the uppermost end of the casing string when the elevator is lowered about the uppermost end of the casing string;

thereafter setting the casing circulator to seal the sealing member between the casing string and interior packer tube;

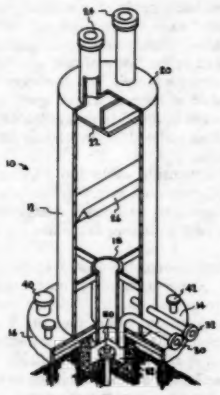
thereafter pumping fluid through a flow line, through the flow path in the packer tube of the set casing circulator and into the casing string to wash the well bore adjacent the lowermost end of the casing string; and

thereafter deactivating the casing circular to unseal the sealing element from the casing string.

5,191,940
OIL/GAS SEPARATOR FOR INSTALLATION AT BURNING WELLS

Carol T. Alonso, Orinda; Donald A. Bender, Dublin; Barry R. Bowman; Alan K. Burnham, both of Livermore; Dwayne A. Chesnut, Pleasanton; William J. Comfort, III, Livermore; Lloyd G. Guymon, Livermore; Carl D. Henning, Livermore; Knud B. Pedersen, Livermore; Joseph A. Sefcik, Tracy; Joseph A. Smith, and Mark S. Strauch, both of Livermore, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 22, 1991, Ser. No. 748,586
Int. Cl.[5] A62C *3/00*
U.S. Cl. 169—69 **20 Claims**



1. An oil/gas separator comprising: a metal vessel having a bottom and a top, with an opening in the bottom and at least one opening in the top;

at least one metal obstruction in the interior of said vessel and secured to said vessel for blocking a projection of said bottom opening onto said at least one top opening;

a metal tube secured in and extending upwards from said bottom opening and into said vessel to form an internal container within an inner periphery of a lower section of said vessel;

means for sealing said vessel around a source of oil passing into said vessel;

pumping means connected to said internal container of said vessel and to a region beneath said metal tube for pumping oil to an oil distribution system.

5,191,941
SUSPENSION DEVICE FOR A PLOW

Olav Njå, and Einar Ognedal, both of Kvernaland, Norway, assignors to Kverneland Klepp AS, Kvernaland, Norway

Filed Oct. 23, 1991, Ser. No. 781,591
Claims priority, application Spain, Nov. 15, 1990, 9002903
Int. Cl.[5] A01B *3/28, 61/00*
U.S. Cl. 172—224 **11 Claims**

11. A suspension device for a plow, comprising:

a plow body;

a plow frame;

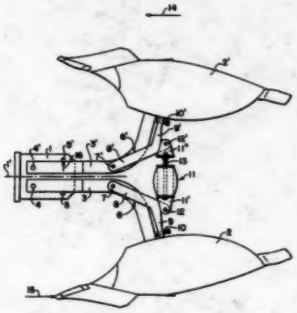
a plow beam being connected to said plow body and being pivotally connected to said plow frame;

a rotation restricting mechanism located on the plow frame, said rotation restriction mechanism preventing a rotation of said plow beam beyond a predetermined point;

a lever being pivotally connected at a first portion thereof to said plow beam and having a stop member at a second

portion thereof, said stop member resting against said plow beam; and

an elastic, compliant, resilient damper connecting a third



portion of said lever to said plow frame, such that a damper force is provided to said plow body;

wherein when said plow body is in a plowing position, said plow body vibrates due to said damper force.

5,191,942

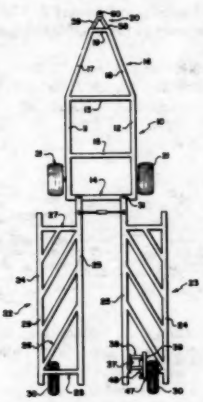
AGRICULTURAL FRAME FOR PROPULSION OF GROUND WORKING IMPLEMENTS

Raymond Bussiere, Saskatchewan, Canada, assignor to High-Line Manufacturing Inc., Vonda, Canada

Filed Jun. 19, 1990, Ser. No. 540,005

Int. Cl.[5] A01B *73/00*

U.S. Cl. 172—286 **23 Claims**



1. An agricultural frame for propulsion of ground working implements across a field in a working position and in a transport position comprising a centre frame having a hitch portion for attachment to a tractor, ground wheels mounted on the centre frame for movement of the centre frame across the ground in a direction of forward movement, a pair of wing frames attached to the centre frame each at a respective side of the centre frame, a ground wheel mounted on each wing frame for movement of the wing frame across the ground, a plurality of ground working implements each mounted on a respective one of the centre frame and the wing frames for movement therewith, means mounting each ground wheel on the respective one of the centre and wing frames for movement in a vertical direction relative to the respective one of the frames from a first position in which the ground working implements on said one frame are in ground working engagement with the ground to a second raised position in which the ground working implements are in raised non-operative position above the ground, first connecting means connecting each wing frame to the centre frame for pivotal movement about a horizontal axis substantially parallel to the forward direction, second connecting means connecting each wing frame to the centre frame for pivotal movement about a vertical axis for movement from a working position in which a longitudinal axis of the wing frame projects outwardly to a respective side of the centre frame in a direction generally at right angles to the forward direction to a transport position trailing rearwardly of the centre frame in which said longitudinal axis extends therefrom in a direction parallel to the forward direction, and means for steering the ground wheel on each wing frame from a position at right angles to said longitudinal axis to a position parallel to the longitudinal axis, each wing frame including a front beam parallel to said longitudinal axis, a rear beam parallel to said longitudinal axis and spaced rearwardly of the front beam and a plurality of transverse beams interconnecting the front and rear beams, said second connecting means being arranged to provide said vertical axis adjacent said rear beam, and latch means for releasable coupling between the centre frame and the wing frame at a position forwardly of said vertical pivot axis, said latch means including a pin having a longitudinal axis of the pin lying along said horizontal axis with said pin mounted on one of said centre frame and said wing frame, a receptacle mounted on the other of said centre frame and said wing frame for receiving said pin for pivotal movement of the pin relative to the receptacle about said axis longitudinal of the pin and transverse to the receptacle and a latch member for engaging the pin and pulling the pin into said receptacle, said latch means thus providing one part of said first connecting means.

5,191,943

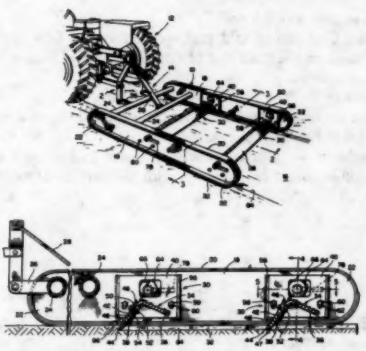
THREE-POINT HITCH ATTACHED GRADER WITH ADJUSTABLE BLADES

Michael K. Minor, 7411 Kinston Cove, Southhaven, Miss. 38671, and Bernie B. Bierman, 8569 Kings Cross Cove, Cordova, Tenn. 38018

Filed Aug. 22, 1991, Ser. No. 748,524

Int. Cl.[5] A01B *35/20*; F16B *1/00*

U.S. Cl. 172—393 **16 Claims**



1. A grader comprising a rigid frame defined by a pair of parallel ground engaging side frame members rigidly interconnected by transverse frame means, a pair of longitudinally spaced, transversely extending parallel blade assemblies, means connecting said blade assemblies to said side frame members, each of said blade assemblies including a continuous cutting blade oriented at an angle of 17° in relation to vertical, said means connecting the blade assemblies to the side frame members including an end plate rigidly connected to each end of

each blade assembly and oriented vertically for engagement with the side frame members, each side frame member including a pair of vertical guides engaging and guiding each of said end plates, said means connecting the blade assemblies to the side frame members further including cam means interconnecting the end plates and side frame members to move the end plates vertically and means interconnecting the end plates and side frame members to lock the end plates in a vertically adjusted position to provide a rigid support for the blade assemblies.

5,191,944

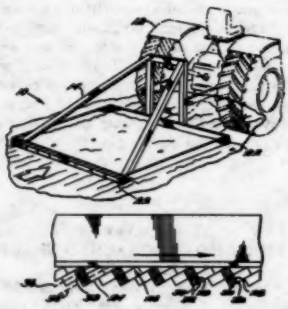
DEVICE FOR DRESSING A LAWN

Howard R. Thorn, 169 Liberty Hill Rd., Lexington, S.C. 29073

Filed Aug. 21, 1991, Ser. No. 748,185

Int. Cl.[5] A01B *59/043*

U.S. Cl. 172—445.1 **2 Claims**



1. A device for towing behind a vehicle to dress a lawn, said device comprising:

a cartridge having

a grid made of a section of expanded metal, said grid having a first end and an opposing, second end, and

a first angle iron,

a second angle iron,

said first end of said grid welded to said first angle iron and said second end of said grid welded to said second angle iron;

a frame;

bolts for releasably attaching said cartridge to said frame;

means for connecting said frame to a vehicle so that said vehicle can pull said frame and said frame can hold said grid in direct engagement with the surface of said lawn.

5,191,945

PLOW DEBRIS DEFLECTOR

Noe T. Loya, Raymondville, Tex., assignor to L & M Industries, Raymondville, Tex.

Filed Jun. 18, 1991, Ser. No. 716,879

Int. Cl.[5] A01B *15/00*

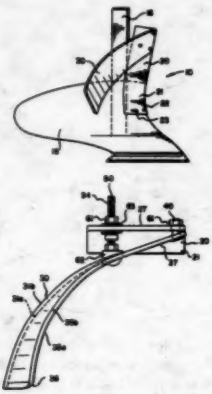
U.S. Cl. 172—759 **20 Claims**

1. A plow debris deflector comprising:

a first portion configured to connect a plow moldboard;

a second portion exhibiting a lower surface; and

an adjustable connector adjustably connecting said first portion to said second portion and comprising at least an adjusting bolt exhibiting a longitudinal axis and an angled portion positioned at a range of approximately 10° to 40° from the longitudinal axis and configured to adjust an



angular connection between said first and second portions.

5,191,946

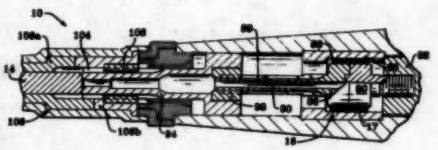
WRAP SPRING CLUTCH FOR PERCUSSIVE APPARATUS

Leland H. Lyon, Roanoke, and Robert R. Kimberlin, Troutville, both of Va., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Division of Ser. No. 687,333, Apr. 18, 1991, abandoned. This application Jul. 14, 1992, Ser. No. 913,259

Int. Cl.[5] B25D *16/00*

U.S. Cl. 173—97 **2 Claims**



1. A clutch assembly for transmitting rotary motion in a percussive apparatus to a drill steel, the clutch assembly comprising:

a first hub having a first cylindrical surface formed thereon;

a second hub, substantially rotationally coupled to the drill steel, having a second cylindrical surface formed thereon, the second cylindrical surface being coaxial with the first cylindrical surface;

a wrap spring in engagement with a portion of both the first cylindrical surface and the second cylindrical surface, wherein relative rotary motion between the first hub and the second hub is permitted in a first direction and restricted in a second direction;

said first hub being a driver hub and said second hub being a driven hub;

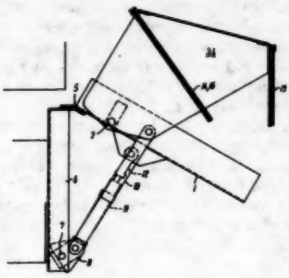
and a piston reciprocally mounted in said apparatus, said piston alternately loosening and tightening said wrap spring to cause relative motion between said first and second hubs.

5,191,947

WEIGHING PAN FOR WEIGHING BATCHES OF PRODUCTS AND A COMBINATION WEIGHING MACHINE EQUIPPED WITH A NUMBER OF SUCH WEIGHING PANS

Gunnar C. Petersen, 14 Rodkildevaenget, DK-5230 Odense M, Denmark

Filed Dec. 5, 1990, Ser. No. 622,799
Claims priority, application Denmark, Dec. 13, 1989, 6284/89
Int. Cl.[5] G01G *13/00*
U.S. Cl. 177—25.18 **10 Claims**



1. A weighing pan for weighing products to be packaged batchwise, for use in combination weighing of irregularly shaped and comparatively fragile fruit and vegetable products comprising:

a stationary supporting frame, a pair of side walls and a bottom flap disposed between said side walls, said bottom flap pivotally connected with said stationary supporting frame between a product collecting position and a product discharging position, said side walls and said bottom flap defining a product discharge opening, said product discharge opening being covered by a front wall, said bottom flap being shaped and positioned to collect individual product units substantially arraanged in a single row when said bottom flap is oriented in said product collecting position, said bottom flap extending downwardly towards said discharge opening such that said product units collected in said single row are discharged through said discharge opening in a substantially sliding movement when said bottom flap is oriented in a product discharge position.

5,191,948

WEIGHING APPARATUS WITH RESILIENTLY SUSPENDED PAN SUPPORT ARM

Ernst Strickler, Wolfhausen, Switzerland, assignor to Mettler - Toledo AG, Greifensee, Switzerland

Filed Apr. 25, 1991, Ser. No. 698,395
Claims priority, application Switzerland, May 23, 1990, 1757/90
Int. Cl.[5] G01G *21/10*
U.S. Cl. 177—188 **5 Claims**

1. Electronic weighing apparatus, comprising:

(a) a frame (9);

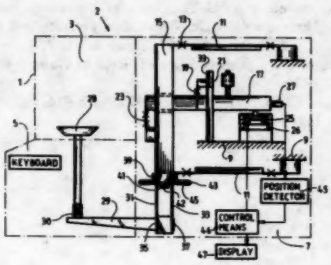
(b) a vertical load receiving member (15) having an upper end and a lower end;

(c) parallel guide means (11) connecting said load receiving member for vertical movement relative to said frame;

(d) a weighing pan (28);

(e) a horizontal support arm (29) having a pair of ends a first one of which is connected with said weighing pan; and

(f) resilient means for suspending the other end of said support arm from the lower end of said load receiving member, said resilient means including a pair of vertical paral-



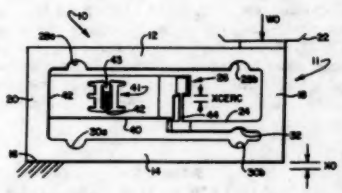
lel generally flat leaf springs (31, 33) arranged normal to, and spaced longitudinally of, said horizontal support arm.

5,191,949

WEIGHING APPARATUS WITH AN ADJUSTABLE RATIO OF STRESSES IN THE LOAD BEARING MEMBERS

Nigel G. Mills, Inman, S.C., and Ronald J. Gaines, Worthington, Ohio, assignors to Mettler-Toledo, Inc., Worthington, Ohio

Filed Jul. 2, 1991, Ser. No. 724,833
Int. Cl.[5] G01G *3/08*
U.S. Cl. 177—229 **44 Claims**



1. Weighing apparatus for measuring load force applied to a receiving portion thereof and having a force communication path to ground, comprising:

first spring means within said force communication path, coupled in force transfer relationship between said receiving portion and ground and deflectable under said load force to exhibit a first value of stress, for providing force transfer response to said load force;

a sensor positioned within said path to deflect under an applied force to generate an output correlatable with the force value of said load force; and

a transmission spring within said path in parallel force relationship with said first spring and in series force relationship with said sensor for asserting an applied force upon said sensor while exhibiting a second value of stress greater than said first stress value exhibited by said first spring by an amount effective to cause substantial cancellation of error within the weighing apparatus including said first and said transmission spring.

5,191,950

HYDROSTATIC TRAVELLING MECHANISM FOR TRACK-LAYING VEHICLES

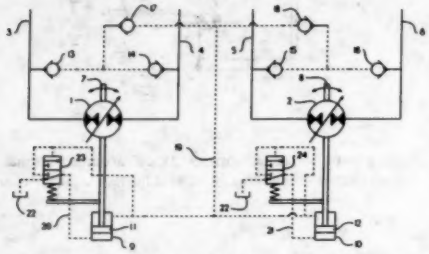
Gustav Kleineisel, Mainaschaff, and Horst Deininger, Hoerstein/Alzenau, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed May 9, 1991, Ser. No. 697,774

Claims priority, application Fed. Rep. of Germany, May 22, 1990, 4016496

Int. Cl.[5] **B62D** *11/04*; **B60K** *17/00*; **F16D** *31/02*

U.S. Cl. 180—6.3 **4 Claims**



1. Hydrostatic travelling gear for track-laying vehicles comprising at least two drive motors **1, 2**; each said drive motor operably connected to the tracks of a track laying vehicle; each said drive motor operably connected to a hydrostatic pump by means of at least one pressure medium supply line **3, 4, 5, 6**; each said drive motor being operably connected to an adjusting device **9, 11, 10, 12** to provide an adjustable working volume; each said adjusting device controlled by a control valve **23, 24** whereby the drive motors can be supplied with different amounts of pressure medium independently of each other; and operating comparator means connected to said at least one pressure medium supply line **3, 4, 5, 6** of each said drive motor **1, 2** for generating a control pressure dependent on the operating pressure of the drive motor **1, 2** and the supply line **3, 4, 5, 6** with the highest operating pressure of all the drive motors **1, 2** and all the supply lines **3, 4, 5, 6** to control the working volume adjusting devices **9, 11, 10, 12** of all the drive motors **1, 2** whereby the supply of pressure medium to the adjusting devices **9, 11, 10, 12** is controlled by said control valve **23, 24** being acted upon by pressure medium under operating pressure; and said control pressure is conveyed through a signal line **19** both to the control valves and adjusting devices of all the drive motors.

5,191,951

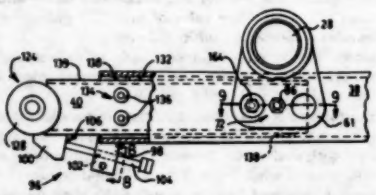
BELTED UNDERCARRIAGE ASSEMBLY

Brent C. Bargfrede, Dunlap; Carl W. Carter; James G. Neal, both of Peoria, and Robert J. Purcell, Washington, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Aug. 30, 1991, Ser. No. 752,811

Int. Cl.[5] **B62D** *55/30*

U.S. Cl. 180—9.1 **15 Claims**



1. A belted undercarriage assembly for a vehicle having first and second side portions and a frame, comprising:

first and second spaced apart endless belt assemblies, each assembly including first and second wheel units and an endless elastomeric belt encircling said first and second wheel units, said first belt assembly being positioned adjacent said first side portion of said vehicle and said second belt assembly being positioned adjacent said second side portion of said vehicle;

first and second wheel supporting frame assemblies, each associated with respective first and second belt assemblies, each frame assembly including first and second tubes, each tube being of a substantially rectangular configuration, said first tube having a first end portion connected to said first wheel unit and said second tube having a first end portion connected to said second wheel unit, one of said first and second tubes having a portion positioned within the other, and one of said tubes first end portion being controllably movable toward and from the first end portion of the other tube;

a vehicle supporting axle having first and second end portions connected to a respective first and second wheel supporting frame assembly, at locations between each first and second wheel units; and

means for connecting said axle first and second end portions to said vehicle frame.

5,191,952

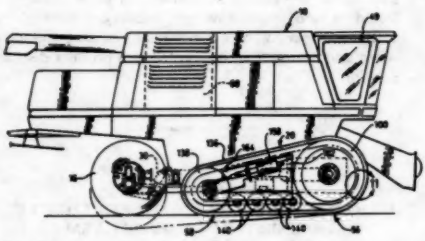
TRACK-TYPE VEHICLE HAVING STEERABLE WHEELS

Ronald L. Satzler, Princeville, and Edward E. Schmillen, Metamora, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Sep. 19, 1991, Ser. No. 762,285

Int. Cl.[5] **B62D** *55/00, 61/10*

U.S. Cl. 180—9.52 **20 Claims**



1. A track-type vehicle having a main frame, an axle, and first and second steerable wheels connected to said axle, comprising:

first and second endless track assemblies, one positioned on each lateral side of said frame;

means for steering said steerable wheels:

a source of pressurized fluid;

a weight distributing cylinder connected between said frame and said axle;

means for controlling the pressure of said pressurized fluid to said cylinder in response to receiving a control signal;

means for measuring the angle of steer of said steerable wheels and producing a signal in response thereto; and

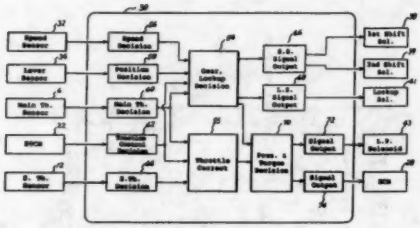
means for receiving the angle of steer signal, generating a control signal, and delivering said control signal to said control means.

5,191,953

ELECTRONICALLY CONTROLLED AUTOMATIC TRANSMISSION

Yasunobu Ito, Okazaki, and Yasuo Mizuno, Chiryu, both of Japan, assignors to Aisin Aw Co., Ltd., Japan

Filed Aug. 7, 1991, Ser. No. 740,847
Claims priority, application Japan, Aug. 15, 1990, 2-214312
Int. Cl.[5] B60K *20/00*
U.S. Cl. 180—197 1 Claim



1. An electronically controlled automatic transmission comprising:

skid-detecting means for detecting skid of the wheels of a vehicle and for generating skid signals responsive to detection of skid;

traction control means for receiving said skid signals from the skid-detecting means and for generating a torque signal in accordance with said skid signals;

engine control means for reducing engine torque responsive to said torque signal from the traction control means; and

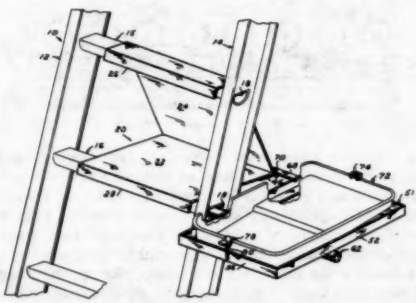
transmission control means for receiving at least one of the torque signal from the traction control means and the skid signal from the engine control means and for reducing hydraulic line pressure in the transmission by a predetermined value only when the traction control means is operating.

5,191,954

LADDER RUNG SUPPORTED COMBINATION PLATFORM AND UTENSIL RACK

Jim D. Ledford, 37 Brentwood Dr., Stillwater, Okla. 74075

Filed Jul. 6, 1992, Ser. No. 909,326
Int. Cl.[5] E04C *7/00*
U.S. Cl. 182—129 4 Claims



1. A tradesman's equipment support means for use on a ladder having forward and rearward surfaces and having spaced uprights joined by vertically spaced hollow open end horizontal rungs, comprising:

a generally L-shaped foot plate having a front edge portion projecting substantially horizontal forward through the ladder and overlying a ladder rung and having a leg portion opposite its front edge portion terminating upwardly in an inverted U-shaped hook overlying the next adjacent upward rung of the ladder;

means on said foot plate for preventing movement thereof relative to the first named ladder rung;

an elongated rod extending at one end portion into the first named rung and projecting laterally of one ladder upright at its other end portion;

a generally horizontal frame having opposing ends and having one end portion overlying and supported by said rod other end portion; and,

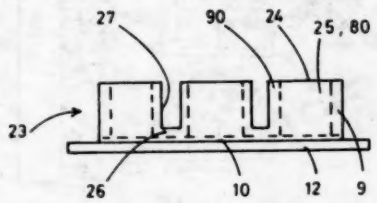
frame stabilizing means for connecting said foot plate with the end portion of said frame opposite said rod.

5,191,955

MULTI-STUD BRAKE FITTING

Hassan Youssef, Taverny, and Yves Bigay, Versailles, both of France, assignors to Le Carbone Lorraine, Courbevoie, France

Filed May 6, 1991, Ser. No. 696,126
Claims priority, application France, May 18, 1990, 90 06601
Int. Cl.[5] F16D *69/02, 69/04, 13/68*
U.S. Cl. 188—251 A 8 Claims



1. A brake fitting comprising:

a plurality of studs separated from each other by spaces, each said stud being made of a sintered friction product and being laterally sheathed by a less fragile sintered metal bead; and

a metal support having a surface on which said studs are fixed;

wherein said surface of the metal support is coated by grains of braze-welding powder which are diffusion bonded thereto, said studs being continuously welded at base portions thereof to said coated metal support surface,

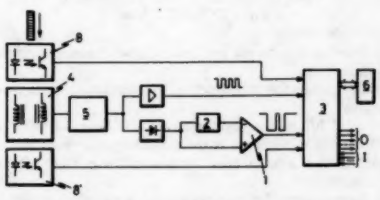
and wherein said less fragile sintered metal bead extends into the spaces between the studs, covering the coated metal support to a depth of at least about 0.5 mm.

5,191,956

ELECTRONIC METHOD AND CIRCUIT FOR ANALYZING ANALOG SIGNALS

Jesus E. Ibarrola, Peralta-Navarra, Spain, assignor to Azkoyen Industrial, S.A., Peralta Navarra, Spain

Filed Jan. 8, 1991, Ser. No. 638,622
Claims priority, application Spain, Jan. 29, 1990, 9000252
Int. Cl.[5] G07D *5/08*
U.S. Cl. 194—317 3 Claims



1. Method for analyzing analog signals applicable to electronic selectors of coins and like metallic pieces comprising the

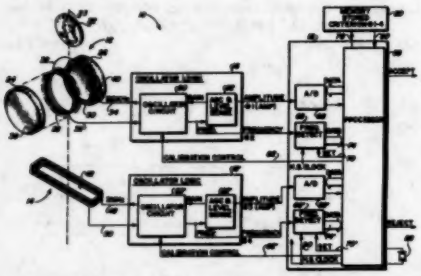
steps of establishing in an analog signal an amplitude which is provided by a measurement sensor, of different measurement areas based upon positive/negative gradient changes in said analog signal and adapting said changes to a digital signal in order to establish measurement areas related to a waveform of the analog signal wherein time and oscillation frequency are measured at each of the measurement areas in order to establish duration and frequency ratios between each measurement area and adjacent areas.

5,191,957

COIN DISCRIMINATION METHOD

Stephen J. Hayes, Swansea, England, assignor to Protel, Inc., Lakeland, Fla.

Filed Jun. 28, 1991, Ser. No. 722,480
Int. Cl.[5] G07F 3/02
U.S. Cl. 194—318 **11 Claims**



1. A method for determining whether or not a coin is acceptable comprising the steps of:

providing a signal to induce an electromagnetic field across an inductor coil where the electrical characteristics of the signal change when a coin passes through the field;

sensing the changes in the electrical characteristics when a coin passes through the field;

determining electrical characteristics for acceptable coin types by passing a plurality of coins of each type past at least one inductor coil and then sensing the changes in the electrical characteristics for each coin passing through the field and then determining statistical variables for the electrical characteristics of each coin type;

storing the statistical variables in a memory by coin type;

computing a statistical variation value for each coin being sampled which passes through the field, related to the stored statistical variables for the corresponding coin type; and

providing an indication that the coin being samples is acceptable when its statistical variation value is less than a predetermined value.

5,191,958

AUTOMATIC FRAMING SYSTEM

Gary Tolocko, Milton, Wis., assignor to Giddings & Lewis, Inc., Fond du Lac, Wis.

Filed Feb. 1, 1991, Ser. No. 649,478
Int. Cl.[5] B65G 37/00
U.S. Cl. 198—346.2 **38 Claims**

1. A framing station for processing a workpiece comprising:

a. a base;

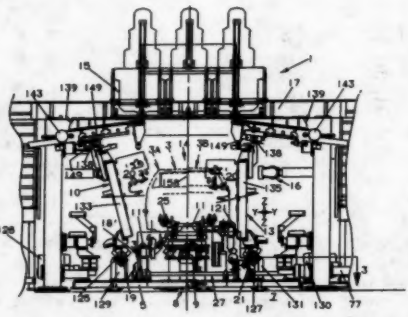
b. pallet means for transporting the workpiece to a transfer point;

c. critical lift means supported on the base for selectively lifting the workpiece at the transfer point from the pallet means to a work station, wherein the critical lift means comprises:

i. frame means for contacting the workpiece to lift it off the pallet means;

ii. first lift means mounted to the base for raising the frame means from a lowered position thereof remote from the workpiece on the pallet means to an intermediate position higher above the base than the lowered position and proximate the workpiece at the transfer point; and

iii. second lift means mounted to the frame means for raising the frame means from the intermediate position thereof to a third position whereat the frame means has lifted the workpiece at the transfer point from the pallet means to the work station;



d. gate means for selectively pivoting between an open configuration remote from the work station and a closed configuration proximate the work station and for selectively clamping the workpiece at the work station when in the closed configuration; and

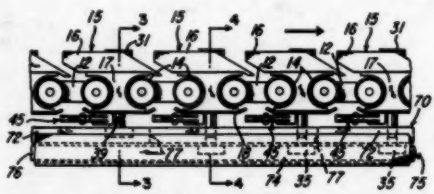
e. processing means for performing selected operations on the workpiece at the work station.

5,191,959

SORTING CONVEYOR WITH VERTICAL SWITCHING SYSTEM

Hendrik Leemkuil, Pickerington, Ohio, assignor to Alvey Inc., St. Louis, Mo.

Filed Jun. 10, 1992, Ser. No. 896,374
Int. Cl.[5] B65G 47/46
U.S. Cl. 198—365 **15 Claims**



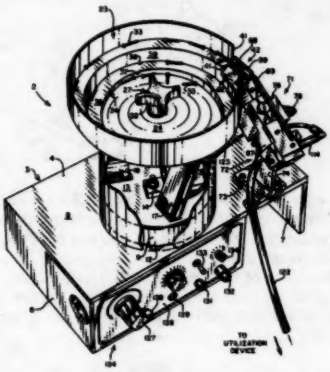
1. A conveyor system for transporting and sorting packages and other articles, comprising an elongated endless flexible carrier having a generally horizontal upper run and including a series of longitudinally spaced transfer members each supported for independent lateral movement, each of said transfer members including a follower supported for generally vertical movement along said upper run between an upper retracted position and a lower extended position, an upper track position for engaging each of said followers in said retracted position, a lower track disposed at a lower level than said upper track for engaging each of said followers in said extended position, one of said tracks diverting from the other said track for moving selected said transfer members laterally across said carrier for diverting an article from said carrier, and means for moving each of said followers between said retracted and extended positions.

5,191,960

AUTOMATED FASTERNER FEED SYSTEM FOR FASTENER ATTACHMENT DEVICES

Robert C. Wareham, Oakdale, Calif., assignor to Haeger Corporation, Oakdale, Calif.

Filed Oct. 11, 1991, Ser. No. 775,727
Int. Cl.[5] B65G 47/24
U.S. Cl. 198—391 18 Claims



1. An automated fastener feed system for fastener attachment devices required to be delivered to a utilization device, comprising:

a) a bowl having an outer periphery for receiving a quantity of said fastener attachment devices in a disoriented mass;

b) means for vibrating the bowl to effect individual migration of said fastener attachment devices radially and circumferentially within the bowl toward and along said outer periphery of the bowl;

c) an orientation module detachably mounted on the outer periphery of the bowl for vibration therewith and adapted to receive said migrating fastener attachment devices and operable to orient said fastener attachment devices for delivery to said utilization device in an acceptable orientation; and

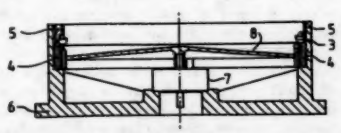
d) a singulator module operatively associated with said orientation module in a manner to be isolated from the vibration of said orientation module and adapted to receive said oriented fastener attachment devices from said orientation module in said acceptable orientation and propel them to said utilization device in said acceptable orientation.

5,191,961

BOWL-FEED APPARATUS

Colin D. Wilson, Largs; Alexander F. MacGregor, Renfrew, and Alistair J. McKillop, Gourock, all of Scotland, assignors to International Business Machines Corp., Armonk, N.Y.

Filed Mar. 23, 1990, Ser. No. 498,074
Claims priority, application United Kingdom, Mar. 31, 1989, 8907327.4
Int. Cl.[5] B65G 29/00
U.S. Cl. 198—392 9 Claims



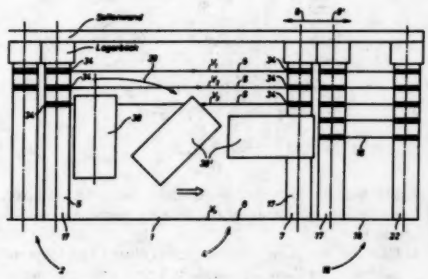
1. A bowl-feed apparatus for supplying workpieces 3 in a desired orientation comprising a central reservoir into which the workpieces 3 are initially loaded in a random orientation, and surrounded by a feedtrack 4 for orientating the workpieces 3 around the periphery of the bowl along which the workpieces 3 travel, different segments of the feedtrack 4 causing misorientated workpieces 3 to fall back into the reservoir, and is characterized in a gas flow emanating from said feedtrack for propelling workpieces 3 along the feedtrack 4 and including means 17, 18, 21 for controlling the gas flow conditions in each of the feedtrack segments to allow the flow conditions along the track 4 to be adjusted.

5,191,962

TURNING DEVICE FOR PARCELS TRANSPORTED ON A BELT CONVEYOR

Jürgen Wegscheider, Isny; Franz Hartmann, Weiler, and Roland Zeuschner, Hergatz, all of Fed. Rep. of Germany, assignors to Natec, Reich, Summer GmbH & Co. KG., Fed. Rep. of Germany

Filed Jun. 5, 1991, Ser. No. 710,698
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1990, 4041477
Int. Cl.[5] B65G 29/00
U.S. Cl. 198—415 11 Claims



1. A turning device for articles being carried by a conveyor comprising:

a plurality of endless part conveyor belts extending parallel to one another in a conveying plane, each said part conveyor belt being arranged to run around a set of idler pulleys which are rotatable independently of the idler pulleys of the other part conveyor belts;

a drive shaft drivable in rotation, on which are mounted a plurality of belt pulleys, one engaging each of said part conveyor belts, the effective diameters of said pulleys increasing over the length of said shaft;

means for driving said shaft in rotation;

means for coupling together the pulleys on said shaft to rotate together whereby when the shaft is driven said part conveyor belts are driven at different speeds and a velocity gradient is set up across the width of said conveying plane to turn articles being carried thereon;

a make-up conveyor located at the downstream end of said conveying plane for receiving articles from said conveyor belts, said make-up conveyor including a rotatably mounted return roller at the article receiving end of said make-up conveyor;

one set of idler pulleys being mounted on a shaft provided at the end of the conveying plane, the position of said idler pulley shaft and return roller being adjustable in the conveying direction to vary the length of said conveying plane; and

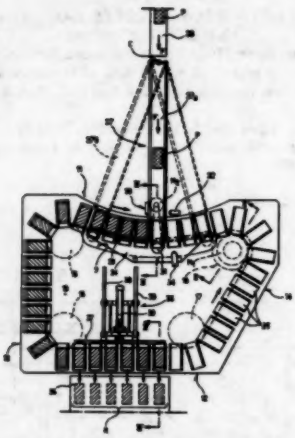
said driving means comprising a single drive for said drive shaft and said make-up conveyor.

5,191,963

MACHINE FOR GROUPING IN PARALLEL ROWS PRODUCTS ARRIVING IN A SINGLE LINE, PARTICULARLY FOR FEEDING CARTONING MACHINES AND THE LIKE

Mario Delsanto, Feletto Canavese, Italy, assignor to Meca-Tronic S.n.c. di Rusina'V., Spatolisano F., & C., Mappano, Italy

Filed Feb. 20, 1992, Ser. No. 838,176
Claims priority, application Italy, Feb. 26, 1991, T091 A-000128
Int. Cl.[5] B65G *25/00*
U.S. Cl. 198—429 10 Claims



1. Machine for grouping in parallel rows products arriving in a single line, particularly for feeding cartoning machines, comprising:

at least one actuation chain which is closed in a loop and is guided by toothed pinions along a path which comprises a side for loading individual products, which has the shape of an arc of a circle, and a straight side for unloading the rows,

a plurality of movable seats which are supported by said chain with a constant spacing pitch and are suitable for moving along the entire perimeter of said path to receive the products on the loading side and carry them to the unloading side,

first advancement motor means for moving said chain by steps which are equal in length to the number of products which form each row and for moving the seats from the loading side to the unloading side of the path,

a belt conveyor for the single line of products, comprising at least one terminal portion which swings in the horizontal plane and is pivoted at the center of curvature of the circular arc-like loading side of the path of the chain,

second advancement motor means which are supported by the swinging portion of the conveyor and mesh with said chain in order to move said terminal portion in a stepwise manner, align its end with the individual seats and feed the products into each seat both during translatory motion and when the first motor means are inactive,

means for removing the rows of products from the unloading side of the path of the chain, and

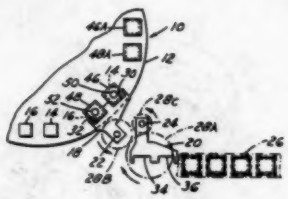
means for controlling said first and second advancement motor means and for energizing them for a fixed duration according to the translatory motion of each row of seats and according to the stepwise movement of the swinging portion of the conveyor.

5,191,964

ROTATING CARTON TRANSFER MECHANISM

Anthony F. Spisak, Redford, and James A. Kirn, Union Lake, both of Mich., assignors to Elopak Systems A.G., Glattbrugg, Switzerland

Filed Mar. 26, 1992, Ser. No. 858,032
Int. Cl.[5] B65G *47/26*
U.S. Cl. 198—447 8 Claims



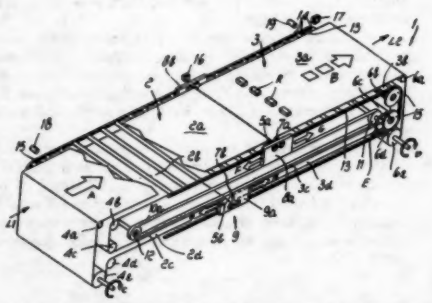
1. On a forming, filling, and sealing machine, a carton transfer mechanism comprising an indexing turret having a plurality of dual mandrels formed thereon, two bottom closed cartons mounted on each of said dual mandrels, a conveyor adapted to receive two sets of two cartons before indexing the four cartons, and carrier means for alternately moving two cartons at a time from two respective dual mandrels to said conveyor.

5,191,965

BUFFER STORAGE UNIT

Manfred Scheid, Ferrara, Italy, assignor to Mopa S.r.l., Italy

Filed Nov. 4, 1991, Ser. No. 787,391
Claims priority, application Italy, Nov. 5, 1990, 3720 A/90
Int. Cl.[5] B65G *47/26*
U.S. Cl. 198—460 2 Claims



1. A buffer storage unit, for accumulating and releasing, in rows which are equidistant or have a programmed timing, products which arrive from a continuous advancement line and which are arranged in a non-equidistant rows, the buffer storage unit comprising:

a first endless conveyor belt means (**2**) wound around a first set of rollers (**4***a–e*, **5***a–b*) of which at least one roller (**4***e*) is continuously motor drivable for driving said first endless conveyor belt means in a continuous manner; and

a second endless conveyor belt means (**3**) wound around a second set of rollers (**6***a–e*, **7***a–b*) of which at least one roller (**6***e*) is stepwise motor drivable for driving said second endless conveyor belt means in an intermittent manner;

said first endless conveyor belt means comprising a first horizontally arranged active portion (**2***a*) for supporting products thereon and said second endless conveyor belt means comprising a second horizontally arranged active portion (**3***a*) also for supporting products thereon, said first set of rollers comprising an output roller (**5***a*) arranged at an output end of said first

active portion (2*a*) and said first endless conveyor belt means having a first return portion (2*b*) which extends from said output roller and which is arranged below said first active portion, said second set of rollers comprising an input roller (7*a*) arranged at an input end of said second active portion (3*a*) and said second endless conveyor belt means having a second return portion (3*b*) which extends from said output roller and which is arranged below said second active portion, said first endless conveyor belt means further comprising first upper (2*c*) and lower (2*d*) compensation portions which are wrapped about an input end roller (5*b*) of said first set of rollers, said second endless conveyor belt means further comprising second upper (3*c*) and lower (2*d*) compensation portions which are wrapped about an output end roller (7*b*) of said second set or rollers, the buffer storage unit further comprising:

a first sliding block means (8*a*,8*b*) which rotatably supports both said output roller (5*a*) and said input roller (7*a*) in a mutually near relationship thereby for transfer of said products from said first active portion (2*a*) to said second active portion (3*a*), said first sliding block means being reversably slidable in a direction which is parallel to an extension of said first and second active portions;

a second sliding block means (9) which is reversably slidable and which rotatably supports both said input end roller (5*b*) and said output end roller (7*b*);

a traction element means (10*a*) which is ridigly connected between said first sliding block means (8*a*,8*b*) and said second sliding block means (9);

gearwheel means (11,12) about which is wrapped said traction element means and which are rotatably motor drivable in opposite directions for mutually sliding simultaneously both said first and second sliding block means, said gearwheel means being drivable independently of said at least one roller (6*e*) of said second set of rollers;

product sensor means (16) for detecting products at said output end of said first active portion (2*a*) and for commanding the drive of said gearwheel means;

a sliding block sensor means (18,19) for detecting a position of said first sliding block means and for providing a signal of excessive filling or emptying depending on said position of said first sliding block means; and

a second product sensor means (17) for detecting products at an output end of said second active portion (3*a*).

5,191,966

APPARATUS AND METHOD FOR UNLOADING BULK MATERIALS

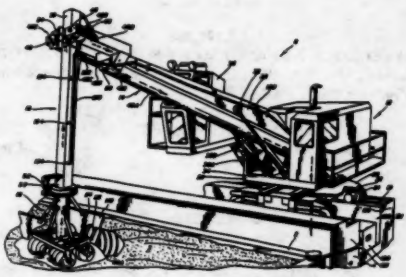
David J. Miller; Allen R. Miller, and Charles P. Miller, all of McHenry, Ill., assignors to Miller Formless Co., Inc., McHenry, Ill.

Division of Ser. No. 549,895, Jul. 9, 1990, Pat. No. 5,078,261, which is a division of Ser. No. 144,428, Jan. 15, 1988, Pat. No. 4,957,198, which is a division of Ser. No. 848,907, Apr. 4, 1986, Pat. No. 4,738,350, which is a continuation of Ser. No. 672,151, Nov. 16, 1984, abandoned, which is a continuation of Ser. No. 414,383, Sep. 2, 1982, abandoned. This application Aug. 28, 1991, Ser. No. 750,971

Int. Cl.[5] B65G *47/22*

U.S. Cl. 198—493 **10 Claims**

1. An apparatus for conveying bulk dry powder material comprising an auger conveyor including a housing and an auger therein, power means for rotating said auger for advancing such powder material along said conveyor, and selectively operable aeration means for injecting a compressed gaseous medium into such material in the interior of said housing while portions of said powder materials are passing therethrough, said injecting means being responsive to the load exerted on said auger in moving said powder material along said conveyor for selectively injecting such gaseous medium and thereby



aerating such powder material when such load exceeds a predetermined value.

5,191,967

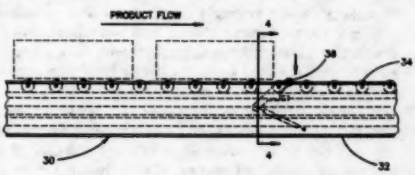
CONVEYOR SYSTEM HAVING NON-SINGULATING ACCUMULATION CONVEYOR

Bernard H. Woltjer, Jenison, and Arthur J. Terpstra, Jr., Allendale, both of Mich., assignors to Rapistan Corp., Grand Rapids, Mich.

Filed Oct. 30, 1990, Ser. No. 605,544

Int. Cl.[5] B65G *13/06*

U.S. Cl. 198—781 **15 Claims**



1. In a conveyor system having a sortation system including means or directing product selectively to a plurality of outbound conveyors and an accumulation conveyor in at least one of said outbound conveyors downstream of said sortation system, said accumulation conveyor comprising:

a multiplicity of conveying rollers for supporting product and being rotatable for conveying said cases, said rollers being grouped into adjacent zones;

driving means associated with each of said zones that is actuable for rotating the rollers in that zone;

product sensing means associated with each of said zones for sensing product in the vicinity of that zone;

control means associated with each of said zones for actuating the driving means of that zone if the product sensing means for that zone does not sense the presence of product;

said control means further being responsive to said product sensing means downstream of the associated zone in order to actuate the driving means of that zone if any of said product sensing means downstream of that zone do not sense the presence of product in order to produce a transport portion in which all zones upstream of the empty zone are actuated to transport product without singulation of any upstream grouped product; and

wherein said control means deactivates the driving means of the associated zone if said product sensing means for that zone and all of said product sensing means downstream of that zone sense the presence of product in order to produce an accumulation portion in which no zones are actuated, whereby an interface between zones in said accumulation portion and zones in said transport portion is dy-

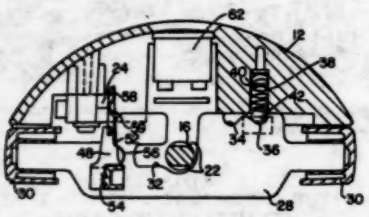
namically shifting in response to product movement along said accumulation conveyor to provide product accumulation without singulation.

5,191,968

SHAFT LOCK ARRANGEMENT FOR A POWER TOOL

Ronald C. McCurry, West Union, S.C., assignor to Ryobi Motor Products Corp., Easley, S.C.

Filed Sep. 23, 1991, Ser. No. 764,239
Int. Cl.[5] H01H 9/28; B27C 5/00
U.S. Cl. 200—43.11 **6 Claims**



1. A shaft lock arrangement for a power tool, the power tool including a housing, a motor mounted in said housing, said motor having a shaft, and a main switch mounted in said housing and controllable for selectively applying power to the motor for rotating said shaft, said arrangement comprising:

a flatted portion of said shaft;

a secondary switch in series with said main switch, said secondary switch having a first contact and an actuator arranged for movement toward and away from said first contact to close and open, respectively, said secondary switch, said actuator being yieldably biased to maintain said secondary switch in its open state;

a lock bar mounted for movement in said housing between first and second positions, said lock bar being formed with an open slot so dimensioned to prevent rotation of said shaft when the flatted portion of said shaft is within said slot, said flatted portion of said shaft being within said slot when said lock bar is in said first position and outside said slot when said lock bar is in said second position; and

an actuator arm mounted on said lock bar and arranged so as to engage said secondary switch actuator and place said secondary switch in its closed state when said lock bar is in its second position with said flatted portion of said shaft outside said slot and free to rotate, said actuator arm releasing said secondary switch actuator when said lock bar is moved from said second position toward said first position to allow said secondary switch to assume its open state.

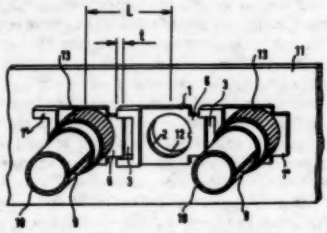
5,191,969

SWITCH ORIENTING DEVICE

Fritz Berger, Oberbuchsiten, Switzerland, assignor to Elektro-Apparatebau Olten AG, Olten, Switzerland

Filed Jan. 24, 1989, Ser. No. 301,540
Claims priority, application Switzerland, Feb. 1, 1988, 330/88
Int. Cl.[5] H01H 9/26
U.S. Cl. 200—296 **11 Claims**

1. A device for orienting switches and like objects, comprising at least one plate-like member having (a) an opening for reception of an object therein, (b) a projection at one side of and spaced apart from said opening, (c) a recess complementary to said projection and disposed at another side of said opening opposite said one side and being spaced apart from said opening, (d) a first pair of substantially parallel surfaces flanking said recess, and (e) a second pair of surfaces flanking said projection, each surface of said first pair being aligned with a surface of said second pair, said member further having a first thickness in the region of said first pair of surfaces and a



different second thickness in the region of said second pair of surfaces.

5,191,970

APPARATUS FOR EQUIPMENT UNIT PROTECTION SWITCHING

Robert C. Brockway, Salem; Philip S. Dietz, East Hampstead, and Lo C. Nguyen, Windham, all of N.H., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 27, 1991, Ser. No. 767,304
Int. Cl.[5] H01H 3/04, 3/20
U.S. Cl. 200—335 **32 Claims**

1. Apparatus for effecting an equipment unit protection switch from an equipment unit being removed from an equipment frame in which it is intended to be inserted to a standby equipment unit, the equipment unit including a circuit board intended to be inserted in a connector in the equipment frame and a latch pivotally mounted on said circuit board for securing the equipment unit in the equipment frame, the apparatus being characterized by,

said latch being physically dimensioned to allow prescribed initial movement thereof from a closed position before any movement of the circuit board in its connector in the equipment frame when attempting to remove said equipment unit from the equipment frame,

means associated with said latch and being responsive to said initial movement of said latch for generating an equipment unit removal indication signal for initiating the equipment unit protection switch prior to any movement of said circuit board in its connector, and

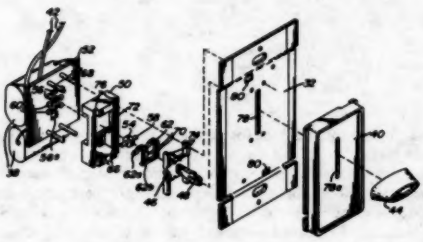
means responsive to said equipment unit removal indication signal for effecting the protection.

5,191,971

MULTI-POSITION WALL MOUNTABLE CONTROL SWITCH WITH TACTILE FEEDBACK LINEAR ACTUATOR

Susan S. Hakkarainen, Bethlehem; Robert S. Hanna, Coopersburg; Elliot G. Jacoby, Glenside, and Robert F. Taylor, III, Bethlehem, all of Pa., assignors to Lutron Electronics Co., Inc., Coopersburg, Pa.

Filed Apr. 5, 1991, Ser. No. 680,990
Int. Cl.[5] H01H *15/06*
U.S. Cl. 200—550 76 Claims



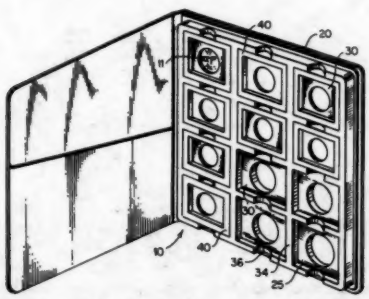
1. A switch comprising:
(a) a plurality of electrical contacts defining a plurality of different switch settings;
(b) an actuator movable in a linear path between positions corresponding to each switch setting;
(c) roller means disposed between the actuator and a stationary bearing surface for rolling the actuator in the linear path over the stationary bearing surface upon application of an external sliding force to the actuator, the stationary bearing surface being distinct from, and the roller means being substantially electrically isolated from, the electrical contacts, the roller means carrying a conductor for establishing an electrical connection between the contacts at each setting, the conductor being raised away from the electrical contacts between switch settings.

5,191,972

STORAGE AND DISPLAY DEVICE FOR COINS AND THE LIKE

James A. Helzer; David P. Hanefeld, and Dwight Hayes, all of Cheyenne, Wyo., assignors to Unicover Corporation, Cheyenne, Wyo.

Filed Mar. 11, 1992, Ser. No. 849,593
Int. Cl.[5] A45C *1/00*
U.S. Cl. 206—840 14 Claims



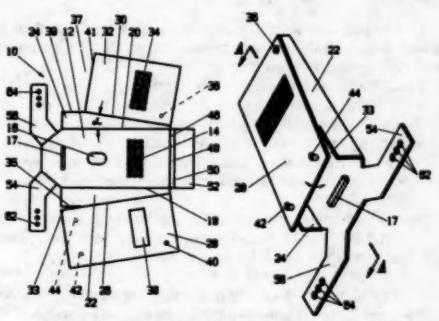
1. An article display and storage device for displaying a generally planar article having opposed major faces, said device comprising:
(a) an article holder having a pair of opposed, rigid generally planar walls, at least one of said walls being transparent to permit viewing a major face of an article in said cavity, and means to secure said wall members together to form a closed article-holding cavity therebetween;
(b) a generally planar article-displaying compartment for receiving in an article displaying position in said compartment, an article holder having in said article-holding cavity thereof an article to be displayed;
(c) an apertured, generally planar article holder retaining member for retaining an article holder in said article-displaying position in said article-displaying compartment, said retaining member being releasably retainable in an article holder retaining position in said article-displaying compartment, having an article holder engaging portion for bearing against an article holder in a respective article-displaying compartment to retain an article holder in said compartment, and having an aperture to permit viewing a major face of an article in the article-holding cavity of an article holder in said article-displaying position in said article-displaying compartment;
(d) means for preventing lateral motion of an article holder, when an article holder is positioned in said article displaying position, in a plane parallel to that of the article displaying compartment; and
(e) means for releasably retaining said article holder retaining member in an article holder retaining position in said article-displaying compartment such that, when an article holder having an article is in said article-displaying position in said compartment, the article holder engaging portion of said retaining member bears against the article holder and retains the article holder in position in said article displaying compartment such that a major face of the article is viewable through the aperture in the article holder retaining member and through a transparent wall of the article holder.

5,191,973

ADJUSTABLE PAINTBRUSH HOLDER

Boris Shteynberg, San Francisco, Calif., assignor to Kass Enterprises, San Bruno, Calif.

Filed Jun. 24, 1992, Ser. No. 903,721
Int. Cl.[5] B65D *75/14, 5/50*
U.S. Cl. 206—15.2 18 Claims



1. A one-piece paintbrush holder for a paintbrush having bristles, a ferrule, and a handle, said holder having an inner face and an outer face, said holder comprising:
a main panel for covering one face of said paintbrush, said main panel including first circulation means for ventilating said bristles, viewing means for inspecting said bristles and said ferrule, and brush-supporting means for tapering said bristles at a specific angle;
a first side panel being foldably connected to a right side of said main panel, said first side panel having a taper from a

top to a bottom thereof, said taper having said specific angle;

a second side panel being foldably connected to a left side of said main panel, said second side panel having said taper from the top to the bottom thereof and a wedge-shaped longitudinal cutout at a top thereof;

an intermediate panel foldably connected to a right side of said first side panel, said intermediate panel including second circulation means for ventilating the bristles of said paintbrush, the outer face of said intermediate panel having a first fastener;

a spacer panel foldably connected to a bottom side of said main panel;

a lower panel foldably connected to a bottom side of said spacer panel;

a front panel foldably connected to a left side of said second side panel, an outer face of said front panel having a second fastener and a third fastener, said front panel having an aperture large enough to expose said second circulation means once said intermediate panel and said front panel are folded, said front panel incorporating closure means for locking with said first fastener; and

fastening means for adjustably locking with said second and third fasteners, said fastening means being attached to a top side of said main panel.

5,191,974

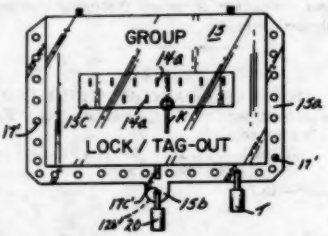
SAFETY BOX

Marion J. Saalman, Rte. 2, Box 100, Tell City, Ind. 47586

Filed May 19, 1992, Ser. No. 885,543

Int. Cl.[5] A45C *11/32*

U.S. Cl. 206—37.6 **7 Claims**



1. A safety container for storing at least one key therein, which key is used to render power driven machinery operative, said container comprising

a base defining a storage cavity therein,

a lid which is transparent on at least a portion thereof and which is pivotally attached to said base, for selectively opening and closing said cavity and for permitting viewing of the contents of said cavity therethrough when said lid is closed against said base such that said cavity is closed,

means disposed in said cavity for supporting at least one key thereon so as to be viewable through said transparent portion when said lid is closed against said base,

a first flange attached to and along at least a portion of the periphery of said lid and projecting outwardly therefrom,

a second flange attached to and along at least a portion of the periphery of said base and projection outwardly therefrom, said first and second flanges lying in registry with one another when said lid is closed against said base, said first and second flanges each defining a plurality of spaced apart apertures, the plurality of apertures in one of said flanges registering with the plurality of apertures in the other of said flanges when said lid is closed against said base such that an identification member can be inserted through any one pair of registered apertures to secure said lid against said base.

5,191,975

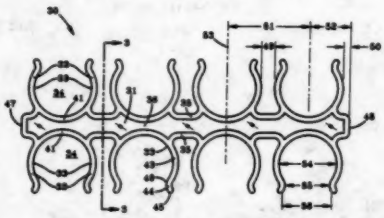
PACKAGING DEVICE AND PACKAGING ASSEMBLY

Paul A. Pezzoli, Worthington; Antonino Araujo, Jr., Arlington, and Raymond W. Hazlett, Sugar Grove, all of Ohio, assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Dec. 13, 1990, Ser. No. 627,152

Int. Cl.[5] B65D *75/00*; B66C *1/42*

U.S. Cl. 206—151 **23 Claims**



1. A packaging device for retaining a plurality of containers, said device comprising a longitudinal central section and a plurality of means for gripping containers integral therewith, each of said gripping means comprising a pair of opposed resilient gripping members with opposite sides of said longitudinal central section having at least two of said paris of gripping members extending therefrom, each gripping member of each said pair of gripping members having a gripping surface and each pair of gripping members forming an opening for receiving and retaining a container, each said opening having a centerline that is perpendicular to a longitudinal axis of said longitudinal central section and is colinear with the centerline of an opening located on the opposite side of said longitudinal axis, said longitudinal central section having a pair of opposed longitudinal ends which are each disposed longitudinally outwardly of the nearest gripping members, and the distance between the centerlines of the openings formed by any next adjacent pairs of gripping members is twice as large as the distance between each said longitudinal end and the centerline of the openings formed by the nearest pairs of gripping members, as measured along the longitudinal axis of the longitudinal central section.

5,191,976

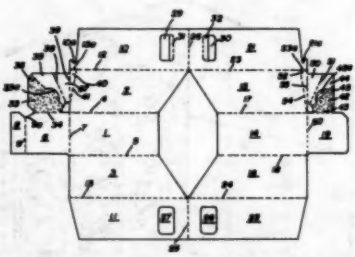
BASKET CARRIER WITH WEBBED REINFORCED BOTTOM

James T. Stout, Acworth, and James B. DeMaio, Marietta, both of Ga., assignors to The Mead Corporation, Dayton, Ohio

Filed Dec. 3, 1991, Ser. No. 801,884

Int. Cl.[5] B65D *71/00*

U.S. Cl. 206—198 **6 Claims**



1. An article carrier comprising opposed side walls, end wall panels foldably joined to the end edges of said side walls and extending inwardly therefrom, riser panels foldably joined to said end wall panels remote from said side walls and extending medially inward of the carrier and having upwardly extending

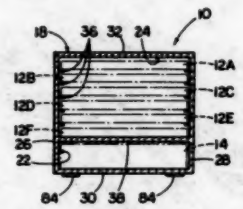
portions, a multiple ply handle formed in the upwardly extending portions of said riser panels, a bottom panel foldably joined to the lower edge of each one of said side walls, an anchoring panel foldably joined to a side edge of each of said bottom panels and secured in flat face containing relation therewith, a first web panel foldably joined to each of said anchoring panels along a diagonal edge of each of such anchoring panels which edge is angularly disposed relative to said side edge of the associated bottom panel, a second web panel foldably joined to each of said first web panels along a diagonal fold line which is angularly disposed to said diagonal edge, and an attachment flap foldably joined to each of said second web panels along one edge of each of said second web panels wherein said one edge is generally coaxial with an side wall lower edge and each attachment flap being also foldably joined to the lower part of an adjacent one of said end wall panels along a fold line which is angularly disposed relative to said fold line between said second web panels and said attachment flap and forming a lower bottom portion of the associated end wall panel.

5,191,977

STORAGE CONTAINER FOR STORING COMPACT DISC CASES AND MULTI-DISC CHANGER CARTRIDGE

Scott H. Markovitz, 23 Oakhurst Cir., Pittsburgh, Pa. 15215

Filed Mar. 9, 1992, Ser. No. 848,476
Int. Cl.[5] B65D *85/57*
U.S. Cl. 206—309 **13 Claims**



1. A storage container for storing cases for holding compact discs and for storing a multi-disc changer cartridge for a compact disc player, said storage container comprising:

(a) a housing having an interior cavity and including an interior partition wall extending across said interior cavity so as to define a pair of separate interior compartments in said cavity of said housing;

(b) one of said pair of separate interior compartments of said housing having means for removably storing a multi-disc changer cartridge containing a plurality of compact discs in a given order; and

(c) the other of said pair of separate interior compartments of said housing being greater in height than said one of said pair of separate interior compartments and having means for removably storing a plurality of cases for the plurality of compact discs in the same order as the given order of the compact discs contained in the changer cartridge.

5,191,978

LOCKER SET FOR STORING GOLF EQUIPMENT

Stuart W. Strader, Portland, and John P. Wells, Molalla, both of Oreg., assignors to Strader, Wells & Jamison, Inc., Portland, Oreg.

Filed Jul. 19, 1991, Ser. No. 732,608
Int. Cl.[5] A63B *55/00, 55/08, 57/00*
U.S. Cl. 206—315.2 **4 Claims**

2. In combination, a set of lockers for storing golf equipment including a golf club bag and a golf club cart;

the set of lockers comprising first and second enclosures, each of the enclosures being defined by top and bottom walls, first and second vertical side walls, and first and second vertical end walls, the first enclosure being disposed above the second enclosure;

the top and bottom walls having a length and a width;

each of the side walls having a length and a height, and each of the end walls having a height and a width, the widths of each of the end walls being substantially equal;

the first and second end walls of each enclosure being rectangular in shape, the first end wall of each enclosure comprising a door and including means for pivotally mounting said door to provide access to the enclosure;

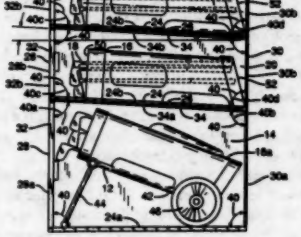
the lengths of the top and bottom walls of the first and second enclosures being longer, by at least a factor of two, than the widths of the walls;

the heights of the end walls of the second enclosure being substantially greater than the widths of the end walls;

the top and bottom walls of each enclosure being rectangular in shape;

the end walls of both the first and second enclosures being oriented vertically;

the first and second side walls of the first enclosure each having four corners, the corner adjacent to the bottom wall and the first end wall defining an angle greater than ninety degrees and the corner adjacent to the bottom wall and the second end wall defining an angle less than ninety degrees;



the second end wall of the second enclosure having a height substantially less than the height of the first end wall of the second enclosure;

wherein the bottom wall of the first enclosure defines a floor thereof that is inclined downwardly as it extends from the first end wall to the second end wall thereof;

the golf club bag being disposed in the fist enclosure;

the golf club bag including a plurality of golf clubs;

the golf club bag having a longitudinal axis and comprising generally an open top and a closed bottom;

the golf club bag being disposed in the first enclosure with the longitudinal axis generally parallel to the bottom wall of the first enclosure and the open top adjacent to the first end wall, for urging the golf clubs int he golf club bag toward the bottom of the golf club bag;

the golf club cart being disposed in the second enclosure, the golf club having a frame portion, a handle portion, and a wheel portion;

the frame portion being adapted for carrying a second golf club bag;

the handle portion being integral with the frame portion for pushing or pulling the golf club cart;

the wheel portion being mounted on the frame portion, the wheel portion, the wheel portion being positioned to permit the golf club cart to be rolled on the bottom wall of the second enclosure to facilitate withdrawal of the card from the second enclosure.

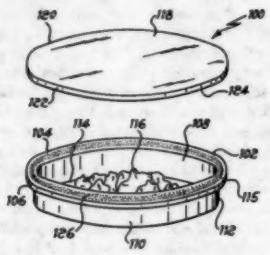
5,191,979
INDIVIDUAL DISPOSABLE DRINKING CUPS AND METHOD
Allan Nemeroff, 124N Beaver Hill, 309 Florence, Jenkintown, Pa. 19046
Filed Jan. 23, 1985, Ser. No. 694,108
Int. Cl.[5] B65D *3/00, 79/00;* **B65B** *5/00;* **G09F** *19/00*
U.S. Cl. 206—459.5 **4 Claims**

1. Drinking cup identification apparatus comprising an elongated container, a set of drinking cups comprising a plurality of cups nestably received in said container and sequentially removable therefrom, and individual identifying indicia associated with each of said cups so as to facilitate visual discrimination of one cup from the others of said set, said indicia including a visually discernible identifying symbol attached to said cup, said identifying symbol being different from the symbols of the other cups in said set so as to distinguish the cups in said set from one another, said indicia being affixed to said cups in a preselected order during manufacture so that said cups, when removed from said container, carry said indicia, and said cups being received in said container in said preselected order.

2. A method of distinguishing disposable drinking cups one from another, comprising the steps of: providing a set comprising a plurality of drinking cups and applying to the cups of said set individual identifying indicia different from the indicia of the other cups of the set so as to facilitate visual discrimination of said cups one from the other, said step of supplying individual indicia to said cups consisting of selecting individual indicia to be associated with individual cups of said set and affixing said indicia to said cups in a preselected order during manufacture of said cups, and the further step of placing said cups in a container in said preselected order.

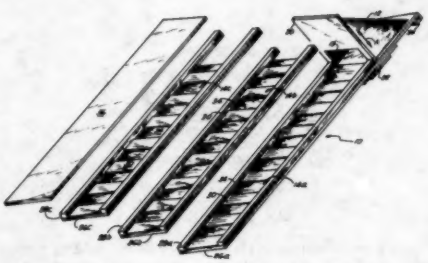
5,191,980
PROTECTIVE VESSEL FOR A GETTER MATERIAL
Claudio Boffito, and Giuliano Fenati, both of Milan, Italy, assignors to SAES Getters SpA, Milan, Italy
Filed Mar. 20, 1992, Ser. No. 855,507
Claims priority, application Italy, Apr. 16, 1991, M191A001037
Int. Cl.[5] B65D *85/72*
U.S. Cl. 206—524.4 **21 Claims**

1. A protective vessel for a getter material comprising:
i) a first sheet of thermally stable material which is attached to;
ii) an adhesive, which in turn is attached to;



iii) a second sheet of thermo-retractable plastics material, said first and second sheets enclosing said getter material.

5,191,981
SPECIFIC GRAVITY METAL SEPARATOR
Frederick W. Young, 122 Wilder St., Niceville, Fla. 32578
Filed Dec. 2, 1991, Ser. No. 801,411
Int. Cl.[5] B03C *1/30*
U.S. Cl. 209—39 **13 Claims**



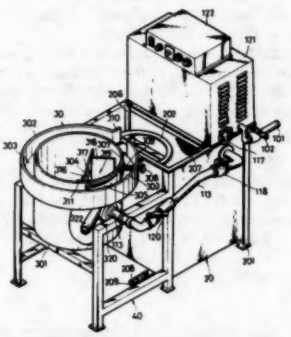
1. A material separator for separating desired material from a slurry comprising:
(a) a hopper having an open top and a bottom opening therein;
(b) at least one passageway in fluid connection with said bottom opening, each said passageway being angled downwardly from said bottom opening and comprising an elongated tray along which the to-be-separated slurry flows, said tray further comprising magnetic separator means for separating and collecting the desired material from said slurry, said magnetic separator means comprising a plurality of spaced apart magnetic spoilers projecting slightly above said tray and extending transverse to the direction of flow of said slurry along said tray; and,
(c) a discharge chute, secured to the end region of each said passageway and extending upwardly from said end region, said discharge chute being open at the top and terminating at an elevation below said open top of said hopper.

5,191,982
BEAN SIFTING DEVICE
Hsu C. Tong, No. 63-1, Kuei Sui St., Taipei, Taiwan
Filed May 15, 1992, Ser. No. 884,717
Int. Cl.[5] B03B *5/28*
U.S. Cl. 209—155 **1 Claim**

1. A bean sifting device comprising:
water-supply assembly being fixedly mounted on upper right side of a water tank, and having a water inlet for supplying water therein through a valve connected two pipes, of

which a smaller pipe being connected into a pump and blades therein, while a larger pipe being connected into a water tank, and said larger pipe being mounted with a water level controller which is to control on or off of said pipe in accordance with signal from a water level detector; said pump being mounted over said water tank by means of a supporting frame; the front end of said pump having a pipe extended into a lower part of said water tank, and said pipe being mounted with a netting filter and a one-way valve above said netting filter; said pump having a pipe extended in a floating-sifting tank with a water outlet; said pipe having a shunt pipe mounted between said pump and said water tank, and opening of said pipe being positioned above the water level in said water tank, and said pipe having a valve; said pipe connected with said floating-sifting tank being mounted with a valve and a one-way valve to limit water to flow only in said floating-sifting tank; said water-supply assembly being covered with a body casing, on which an electric control box being mounted;

said water tank being a rectangular cubic tank supported with supporting legs; a supporting frame being attached to an inner wall of said water tank for receiving a sieve basket; both front and rear inner wall of said water tank being furnished with sliding grooves respectively for inserting sieves respectively; the bottom of said water tank being furnished with a water outlet controlled by means of a valve;



said floating-sifting tank being pivotally mounted with bearing blockets on a supporting frame that is fixed beside said water tank; said floating-sifting tank being round-shaped tank slightly inclined towards said water tank; said floating-sifting tank also being able to turn leftwards (i.e., opposite to said water tank) for pouring off one class of beans; bottom of said floating-sifting tank being a curved one, and an outer wall with a larger diameter bein mounted around said floating-sifting tank in concentric-circle manner to form into a round passage; top edge of said floating-sifting tank having a slot hole being in communication with said round passage; a curved movable plate similar in shape to said slot hole being mounted in front of said slot hole, and said movable plate being attached with a screw bolt which is mounted with a spring; one end of said screw bolt being fastened with a knob on said outer wall; said screw bolt able to move axially upon said knob being turned so as to adjust space between said slot hole and said movable plate; said outer wall having an exhausting port extended to and over said supporting frame on said water tank; a fastening bracket being attached to inner wall of said tank body, and said fastening bracket having two oblong holes for receiving two screw bolts on a rectangular sliding channel plate, and then two knobs being fastened to said two screw bolts respectively; said sliding channel plate fastened to said fastening bracket able to be adjusted up and down upon loosening said two knobs; said sliding channel plate being mounted nearing said slot hole and having two U-shaped channels for receiving a sliding plate which has a damping plate on one side thereof; said damping plate being slightly smaller than said sliding plate; moving said sliding plate able to vary the dimensions of a water damping area formed with said sliding channel plate, said damping plate and said tank body; said tank body being slightly inclined to said water tank; a pipe of said water-supply assembly passing through a front bearing block to extend in the lower part of said tank body with a water outlet, which is fixed in place at an angle; a locking means being furnished under the exhausting port of said floating-sifting tank so as to retain said floating-sifting tank beside said water tank;

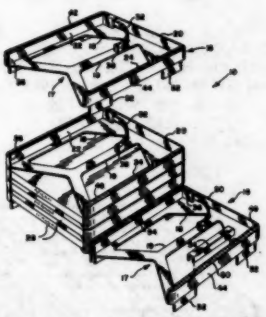
said water-supply assembly able to draw out water with said pump to flow through said netting filter, said one-way valve, a pipe and finally to said pump, from which a pressurized water flowing through a pipe, a valve and a water outlet to said floating-sifting tank; said water outlet being set at an angle and bottom of said tank body being round and curved in shape, which can cause water flowed in to generate a whirl so as to have beans having a light specific gravity become floating in upper water and to flow into said water damping area which is formed with said sliding plate, said damping plate and said slot hole, and then flowing to outside of said tank body, and through said round passage, and to said exhausting port and finally to a sieve basket on said supporting frame of said water tank so as to automatically sift beans into different classes.

5,191,983

MODULAR STORAGE RACK

Stephen N. Hardy, Copley, Ohio, assignor to RTC Industries, Inc., Chicago, Ill.

Filed Oct. 31, 1991, Ser. No. 785,926
Int. Cl.[5] A47F 7/00
U.S. Cl. 211—40 **16 Claims**



1. A modular storage rack for storing a plurality of objects such as compact disc boxes, tape cassettes or the like comprising:

a plurality of individual storage units, each unit being adapted to retain one of said objects therein;

modular means on said storage unit cooperable for frictionally engaging and stacking one unit above another;

resilient means in said storage unit cooperable with a first edge of an inserted object for locking and retaining said object in its unit; and

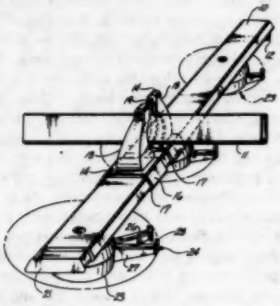
fulcrum means in said storage unit cooperable with a retained object for rotating said object responsive to inward pressure applied to said object whereby said resilient means urges said object from the storage unit.

5,191,984

DISPLAY OR STORAGE RACK FOR NECKTIES AND THE LIKE

Richard H. Kon, Avon, Conn.; Stephen J. Jasperson, Riverside, and Torsti T. T. Jerila, West Covina, both of Calif., assignors to The Stanley Works, New Britain, Conn.

Filed Apr. 13, 1992, Ser. No. 867,886
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—115 **18 Claims**



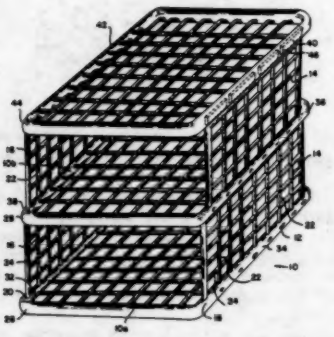
1. A necktie storage rack comprising:
an elongated housing;
means for mounting the housing horizontally in a closet;
an elongated slide having a transverse external cross-section complementary to the internal cross-section of the housing for support within the housing with freedom to slide in the longitudinal direction between a retracted position within the housing and an extended position extending forwardly from the housing;
a plurality of wheels rotatably mounted beneath the slide, each wheel including a plurality of radially extending legs having a horizontal top surface; and
means on the outer end of each leg for retaining a stored necktie on the leg.

5,191,985

MODULAR SUPPORT AND DISPLAY UNIT

Yaffa Licari, 875 Ocean Ave., Elberton, N.J. 07740

Continuation of Ser. No. 567,394, Dec. 30, 1983. This application Jan. 6, 1986, Ser. No. 826,281
Int. Cl.[5] A47B *47/00*
U.S. Cl. 211—188 **18 Claims**



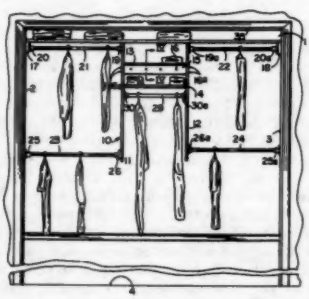
1. Stackable one-piece integral plastic modular support and display unit comprising
side walls of selective thickness, each having a top edge and a bottom edge, the bottom edge having a bottom edge lateral boundary surface portion,
a generally horizontal base of selective thickness and having a top side and an underside, the top side having opposed corresponding top side lateral boundary surface portions to the bottom edge lateral boundary surface portions of the side walls,
a corresponding integral plastic flexible hinge of reduced thickness relative to the thickness of the side walls and relative to the thickness of the base integrally permanently connecting each corresponding said side wall to the base, each said hinge being disposed between the bottom edge of the corresponding side wall and the top side of the base and arranged in laterally offset relation thereto at a corresponding lateral boundary surface portion of the bottom edge of the side wall thereat and at a corresponding opposed lateral boundary surface portion of the top side of the base thereat, for movement of the side walls relative to the base from an outward generally flat horizontal position in generally horizontal alignment with the base to an upward generally vertical position generally normal to the base, and
two cooperating joining means comprising modular extensions having an outer surface as first joined means and corresponding modular recesses having an inner surface as second joining means, one of said first and second joining means being provided on the top edges of said side walls and the other of said first and second joining means being provided in the underside of the base and corresponding adjacent the hinges,
the outer surface of said extensions being of similar dimensions as the dimensions of the inner surface of said recesses to accomplish a snap fit or friction fit therebetween upon stacking one such unit upon the next.

5,191,986

STORAGE ORGANIZER SYSTEM AND METHOD FOR INSTALLING THE SAME

Lee M. Huizenga, 1298 Waukazoo Dr., Holland, Mich. 49424

Filed Jun. 9, 1992, Ser. No. 896,147
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—189 **12 Claims**



1. A storage organizer system for a storage space having a back wall extending vertically upwardly, two spaced parallel side walls extending vertically upwardly and perpendicularly forward of said back wall and a floor comprising:
a center section assembly including two vertical panels spaced parallel to each other and having a vertical edge with at least one shelf extending therebetween and rigidly secured thereto;
a wooden cleat having a length equal to the distance between said vertical panel/, said cleat being secured horizontally to said back wall a distance above the floor greater than the vertical length of said vertical panels, said

cleat having sufficient thickness extending from said back wall to receive a fastener extending into the ends thereof;

said center section assembly mounted on said cleat with the vertical edges of said vertical panels abutting the back wall and said shelf resting on the top edge of said cleat with fasteners extending through said vertical panels and into the ends of said cleat; and

support rods extending between and secured to said vertical panels and said side walls.

5,191,987

BOTTLE MADE OF SATURATED POLYESTERS

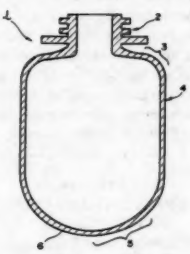
Hiroji Nilmi, and Yoshimitsu Moritani, both of Kuga, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Oct. 21, 1991, Ser. No. 779,851

Claims priority, application Japan, Oct. 19, 1990, 2-282515

Int. Cl.[5] B65D *1/02, 1/42*

U.S. Cl. 215—1 C **4 Claims**



1. A bottle made of saturated polyesters comprising a mouth, an upper shoulder, a barrel, a lower shoulder and a bottom, characterized in that the saturated polyester at the upper and/or lower shoulders has an orientation degree of not more than 0.6, the saturated polyester at the upper and lower shoulders has an orientated crystallinity of not more than 50%, and the thickness of the upper and lower shoulders is not less than 0.25 mm.

5,191,988

PACK WITH PERIPHERAL SEAM FOR FLOWABLE CONTENTS

Wilhelm Reil, Bensheim; Ulrich Deutschbein, Mühltal; Gerd Knobloch, Griesheim, and Udo Liebram, Pfungstadt, all of Fed. Rep. of Germany, assignors to Tetra Pak Holdings S.A., Pully, Switzerland

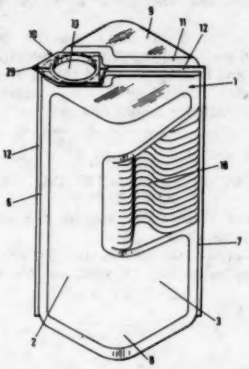
Filed Nov. 30, 1990, Ser. No. 621,616

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1989, 3939970; European Pat. Off., Apr. 11, 1990, 90106965.8

Int. Cl.[5] B65D *1/42*

U.S. Cl. 220—4.24 **16 Claims**

1. A plastic container for a flowable material, said container having side walls which together form a tube, two end walls, one of which is an essentially flat bottom wall and the other of which is an essentially flat top wall, one of said end walls having a closable hole, each of said bottom and top walls having a depression extending thereacross, a seam standing out from said side walls of said container encompasses said container and lies in a plane which is disposed so that it is parallel to the longitudinal central axis of said tube, said seam being arranged so that it extends in said depression in the region of



said top and bottom walls, and that part of the depression surrounds the closable hole.

5,191,989

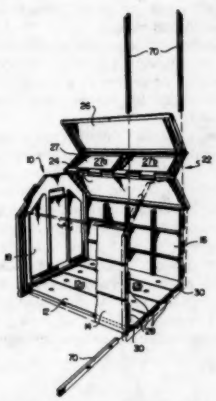
SYSTEM FOR CONSTRUCTING STORAGE CONTAINERS FOR READY ASSEMBLY AND DISASSEMBLY

Bruce J. Butler, 5 Gladney Street, St. John's, Newfoundland, A1E 4T7, Canada

Filed Feb. 20, 1992, Ser. No. 839,304

Int. Cl.[5] B65D *6/24*

U.S. Cl. 220—4.34 **12 Claims**



1. A component system for constructing storage containers adapted for ready assembly and disassembly, said system comprising:

a series of panels, at least some of which include tongues or grooves along at least two edges thereof,

each said tongued panel comprising a sheet section having an edge flange therearound, and at least one tongue disposed longitudinally of and extending outwardly from at least two associated said edges,

each said grooved panel comprising a sheet section having an edge flange therearound and having a receiving channel associated with at least two edges thereof and spaced from said edges, said receiving channel comprising a

recessed part of said sheet section, said channel including at least one opening through said sheet section,

and wherein each said tongue of a tongued panel is adapted for insertion through a corresponding said opening of an adjacent grooved panel into an associated receiving channel,

said system further comprising at least one locking member slidable in each said receiving channel and for slidably engaging and locking each said tongue in position when said tongue is inserted through a corresponding opening into an associated receiving channel.

5,191,990

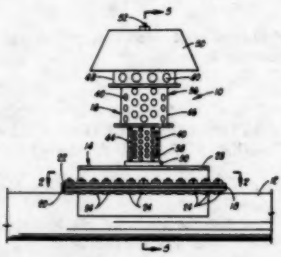
FLASH GAS VENTING AND FLAME ARRESTING APPARATUS

Donald K. Fritts, Tulsa, Okla., assignor to BS&B Safety Systems, Inc., Tulsa, Okla.

Continuation of Ser. No. 719,516, Jun. 24, 1991, abandoned. This application Oct. 23, 1992, Ser. No. 965,531

Int. Cl.[5] F17D *3/00*

U.S. Cl. 220—88.1 **14 Claims**



1. A flash gas venting and flame arresting apparatus for preventing damage to a closed vessel or system by flash gas formed therein, said vessel or system having an outlet connection attached thereto comprising:

pressure responsive valve means connected to said outlet connection or relieving pressure exerted thereon from within said vessel or system as a result of the presence of flash gas therein and for venting said flash gas from said vessel or system; and

a flame arresting receptacle connected to said valve means external of said vessel or system for receiving said flash gas and arresting flame associated therewith prior to releasing said flash gas, said receptacle including an elongated housing having an inlet end connected to said valve means and being of generally increasing internal diameter as the distance from said inlet end of said housing increases, sides having a plurality of flash gas exit ports therein which ports generally increase in size as the distance thereof from said inlet end of said housing increases, and a closed opposite end for changing the direction of flow of flash gas which impinges thereon.

5,191,991

HOUSINGS WITH SAFETY PRESSURE RELIEF MEANS THEREON

Leonard Jackson, Newcastle Upon Tyne, England, assignor to Northern Engineering Industries PLC, Newcastle Upon Tyne, England

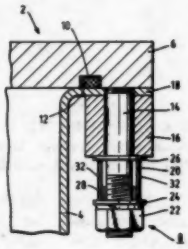
Continuation-in-part of Ser. No. 517,731, May 2, 1990, abandoned. This application May 28, 1991, Ser. No. 707,290

Claims priority, application United Kingdom, May 8, 1989, 8910495

Int. Cl.[5] B65D *51/16*

U.S. Cl. 220—207 **5 Claims**

1. A housing comprising a body member and a closure member secured together in a sealing relationship by a plurality of bolts, each of said bolts having a shaft and a head, a tubular deformable member being provided for each of said bolts to surround the shaft of said each bolt to react between the head of said each bolt in and an abutting one of the body member and the closure member, each of said tubular deformable members being provided with a spacing means for spacing the deformable member coaxially with respect to said each bolt, said spacing means comprising a ring encircling said tubular member and having a thickness so as to assure co-axial positioning of said tubular member about said shaft of said associated bolt to thereby assure uniform loading of said deformable member thereby hindering premature collapsing of said tubular deformable member, whereby upon an increase in pressure within the housing above a predetermined critical value, controlled deformation of the tubular deformable member is effected through relative movement between the body member and the closure member to provide a gap between said members to relieve pressure within the housing.



5,191,992

TAMPERPROOF SEALING ARRANGEMENT FOR GAS CYLINDERS

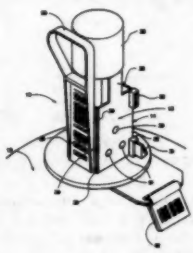
Derek I. Darley, Chaiwan, Hong Kong, assignor to Safe T Seal Limited, Nassau, The Bahamas

Filed May 18, 1992, Ser. No. 884,019

Claims priority, application United Kingdom, May 24, 1991, 9111333

Int. Cl.[5] B65D *51/16*

U.S. Cl. 220—214 **20 Claims**



1. A tamperproof seal arrangement for the pin index outlet valve of a gas cylinder, comprising a body capable of being positioned closely and securely around the pin index valve and having a number of faces matching those of the valve, one face having at least one inwardly directed projection engaging in and matching either the outlet of the valve and/or the pin index hole or holes of the valve, and another face having non-removably associated with it a unique identification marking, that face being joined to adjacent faces by rupturable means, whereby removal of that face with the identification marking will destroy the continuity of the body, whereafter the rest of the body can be removed from the pin index valve to allow use of the pin index valve whilst it is apparent that the

seal arrangement has been destroyed or otherwise visibly damaged.

5,191,993

DEVICE FOR THE SHIFTING AND TILTING OF A VESSEL CLOSURE

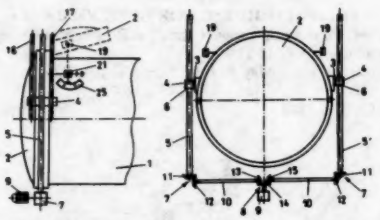
Freddy Wanger, Oberrohrdorf; Marcel Refer, Mohnthal, and Rainer Schneckenburger, Stein, all of Switzerland, assignors to Xorella AG, Wettingen, Switzerland

Filed Feb. 24, 1992, Ser. No. 840,462

Claims priority, application Switzerland, Mar. 4, 1991, 00645/91

Int. Cl.[5] B65D *43/14*

U.S. Cl. 220—333 **6 Claims**



1. A device for the shifting and tilting of a vessel closure having a locking device to seal the vessel under pressure or vacuum, comprising at least one shifting means mounted to the vessel closure for shifting and unlocking the closure after pressure or vacuum in the vessel has been relieved and at least one swivel arm mounted to said vessel closure and vessel for the tilting of the unlocked vessel closure, said at least one swivel arm being journaled to said vessel to permit both rotation and transverse motion of said at least one swivel arm, said at least one swivel arm having a first end and a roller mounted to said end, said vessel having an arcuate support for supporting said roller over at least a part of the range of rotation of said at least one swivel arm.

5,191,994

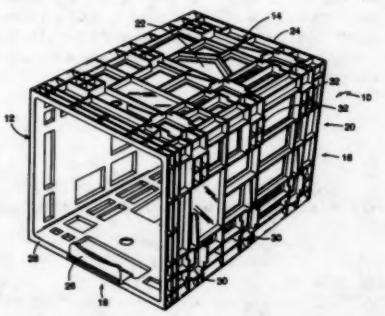
WATER BOTTLE CRATE

Alfred G. Stauble, P.O. Box 17, 2 Main St., Hollis, N.H. 03049

Filed Jun. 10, 1992, Ser. No. 896,228

Int. Cl.[5] B65D *11/16*

U.S. Cl. 220—771 **3 Claims**



1. A molded plastic crate for the storage and transport of a water bottle comprising

two pairs of opposed side walls joined at their adjoining longitudinal edges to define a square box,

a back wall, joined to rear widthwise edges of said side walls, closing one end of the box,

at least one of said side walls having a handle opening, dimensioned so that the fingers of a human hand can be inserted through said opening, in a location which is approximately over the center of gravity of the box when the box contains a full water bottle.

5,191,995

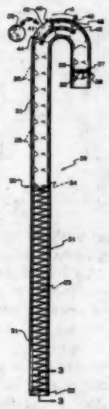
GOLF BALL STORAGE AND DISPENSING DEVICE

Gayle McDonald, 151 W. 5275 South, Murray, Utah 84107

Filed Jan. 13, 1992, Ser. No. 819,998

Int. Cl.[5] B65G *59/00*

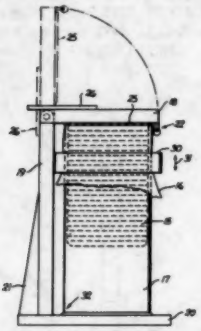
U.S. Cl. 221—24 **7 Claims**



1. A golf ball storage and dispensing device comprising, a straight cylindrical tube for containing a column of golf balls, which straight cylindrical tube is closed on one end and is open at the other; platform means arranged to slide within said straight cylindrical tube under the urgings of spring biasing means and including means for moving said platform means against said spring biasing means; and a means for passing a number of golf balls into said straight cylindrical tube onto said platform means that is also a means for dispensing one at a time, golf balls from said straight cylindrical tube open end and consists of a sleeve whereto is secured, at a right angle a collar, that opens into said sleeve and is arranged for mounting over the open end of the straight cylindrical tube, and a piston means for movement in said sleeve, to travel across the open end of said collar and straight cylindrical tube, said piston means including means for receiving a golf ball when positioned opposite to said straight cylindrical tube open end and for dispensing said golf ball therefrom when said piston is moved in said sleeve to where said means for receiving a golf ball is beyond the side of said straight cylindrical tube.

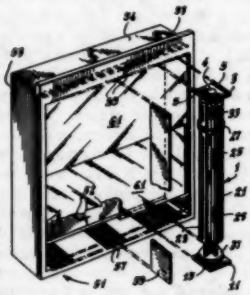
6. A golf ball storage and dispensing device comprising, a cane shaped cylindrical tube for containing a column of golf balls, which cylindrical tube is closed on one end and is open at the other cane head end; platform means arranged to slide within said cylindrical tube under the urgings of spring biasing means and including means for moving said platform means against said spring biasing means; an opening formed through the cane head end of said cylindrical tube with gate means arranged for closing off said opening for passing a number of golf balls into said cylindrical tube onto said platform means; and a cup that has a concave portion to receive a golf ball seated therein, and pivot means for mounting said cup across the cylindrical tube cane head open end to allow said cup to rotate to where the cup concave portion is across the cylindrical tube cane head open end such that a golf ball seated therein will fall from that cup.

5,191,996
BREAD DISPENSING APPARATUS
George C. Jenkins, P.O. Box 1527, Statesboro, Ga. 30458
Filed Dec. 18, 1991, Ser. No. 809,168
Int. Cl.[5] B65G 59/00; B65D 83/00
U.S. Cl. 221—64 6 Claims



6. A dispenser for a loaf of sliced bread packaged in a plastic wrapping having an open end, comprising in combination, a storage compartment with a dispensing opening for storing the loaf of bread with the open end of the plastic wrapping extending out of the dispensing opening with an unwrapped upper slice of bread exposed within the dispensing opening, a dispensing means movable downwardly outside the compartment having a mechanism for grasping the open end of the wrapping thereby to move the bread slice by slice toward the dispensing opening for manual removal as the dispensing means is moved downwardly and sealing cover means for closing the opening over the unwrapped upper slice with limited exposure to air thereby to sanitarily protect the stored bread and prolong its life.

5,191,997
CAROUSEL-TYPE GRAVITY FEED FILM DISPENSER AND FILM CASSETTE THEREFOR
Anthony C. Squitieri, Norwalk, Conn., assignor to Mechtronics Corporation, Stamford, Conn.
Filed Jun. 3, 1992, Ser. No. 892,970
Int. Cl.[5] A47F 1/00
U.S. Cl. 221—119 7 Claims



1. A carousel for dispensing canisters of film, said carousel including

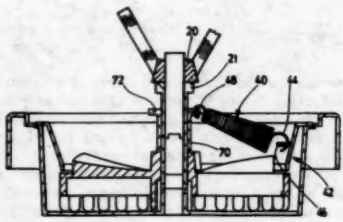
a film-holding base secured to a vertical spine mounted centrally of said base,

a plurality of vertical channels formed about said spine and proximate to one another, said channels having vertical slots therein narrower than said canisters, said slots being on that portion of said channels farthest removed from said spine,

the uppermost portions of said slots being widened and so dimensioned as to form openings to receive said canisters, and the lowermost ends of said channels having openings to permit removal of individual canisters, and

means associated with said base and with the upper end of said spine for pivotally securing said carousel to a display device, said last-named means including a bottom plate pivotally secured to said base and a top plate pivotally secured to said upper end of said spine.

5,191,998
BRUSH HOUSING FOR BULK VENDOR
Josef W. Schwarzli, Vandorf Road, R.R. #4, Stouffville, Ontario, Canada L0H 1L0
Filed May 8, 1992, Ser. No. 880,692
Int. Cl.[5] G07F 11/00
U.S. Cl. 221—203 10 Claims



1. A coin operated bulk vending apparatus for dispensing articles comprising

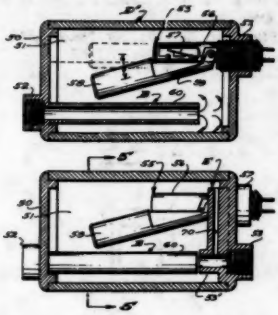
a product bin for storing the articles, disposed above a dispensing wheel advanced by a coin operated gear mechanism and having containers for advancing the articles toward a dispensing aperture located beneath the dispensing wheel, and

means disposed above the dispensing apparatus for preventing loose articles in the product bin from accessing the dispensing aperture, comprising resilient members extending over the dispensing aperture above the dispensing wheel having one end anchored adjacent to a periphery of the dispensing wheel and another end anchored to an adjusting ring adjustably engaged around a bushing disposed about an axis of the dispensing wheel, the bushing having means for releasably retaining the adjusting ring in a selected position.

5,191,999
LIQUID ACTUATED SWITCH DEVICE
Robert K. Cleland, 11051 Via El Mercado, Los Alamitos, Calif. 90720
Filed Feb. 25, 1992, Ser. No. 841,094
Int. Cl.[5] B67D 5/08
U.S. Cl. 222—56 11 Claims

1. A liquid actuating switch device to control the operation of electrically operated devices in response to the presence of a full flow of liquid at an operating pressure in a fluid conducting passage, said switching device includes a case defining an accumulator chamber normally filled with gas with an upper and with a lower portion communicating with upstream and downstream sections of the fluid-conducting passage; and a liquid actuated control switch unit positioned in the chamber

to be actuated by a pressurized liquid forcibly moved into and through the chamber rises to an actuating level therein where



pressures on the gas in the upper portion of the chamber and on the liquid therein reach substantial equilibrium.

5,192,000

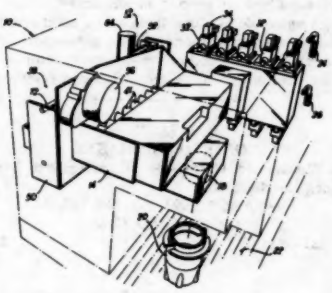
BEVERAGE DISPENSER WITH AUTOMATIC RATIO CONTROL

Lisa C. Wandrick, Decatur; George H. Hoover, Marietta; Roger C. Whigham, Atlanta, and John H. Bearden, Marietta, all of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Continuation-in-part of Ser. No. 522,627, May 14, 1990, abandoned. This application Aug. 2, 1991, Ser. No. 739,742

Int. Cl.[5] B67D *5/08*

U.S. Cl. 222—59 **15 Claims**



1. Apparatus comprising:

(a) a post-mix beverage dispenser including a beverage dispenser valve having separate syrup and water conduits, a solenoid controlled on-off valve in each of said conduits, and an adjustable, piston/sleeve, pressure compensating flow control in each of said conduits;

(b) means for measuring the flow rate through each of said conduits;

(c) means for automatically comparing each of said measured flow rates with a preferred flow rate;

(d) means for automatically adjusting a selected one of said flow controls a selected amount in response to said comparing means;

(e) wherein said adjusting means includes a flow control sprocket wheel connected to each of said flow controls and for rotating a selected one of said sprocket wheels a selected amount to adjust the flow control connected to said selected sprocket wheel; and

(f) wherein said comparing means includes means for detecting a flow error trend over a plurality of separate pours.

5,192,001

PUMP AND MEASURING DEVICE FOR COFFEE MACHINES WITH THREADED PISTON ROD

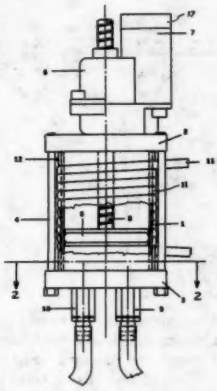
Carlo Bianco, Milan, Italy, assignor to Ricerca Elettromeccanica S.r.l., Milan, Italy

Filed Sep. 24, 1991, Ser. No. 765,905

Claims priority, application Italy, Jan. 25, 1991, MI 91 U 00064

Int. Cl.[5] B67D *5/08*

U.S. Cl. 222—63 **8 Claims**



1. A measuring pump for small electrical household appliances, comprising:

a cylinder (1) having opposite ends;

a first end wall (2) fixed to and closing one end of said cylinder;

a second end wall (3) fixed to and closing an opposite end of said cylinder;

a circulating ball screw type actuator (6) mounted to said first end wall, said actuator having an externally threaded piston shaft (8) extending therethrough and moveable by actuation of said actuator, said piston shaft extending through said first end wall and into said cylinder;

a piston (5) mounted for sliding movement in said cylinder and directly connected to said piston shaft for movement of said piston with actuation of said actuator;

motor means (7) operatively connected to said actuator for actuating said actuator to move said piston shaft and piston in said cylinder;

heating means closely engaged around said cylinder for heating said cylinder;

an exit duct (10) communicating with an interior of said cylinder for discharging liquid from said cylinder with movement of said piston in one direction; and

a suction duct (9) communicating with the interior of said cylinder for supplying liquid into said cylinder with movement of said piston in an opposite direction.

5,192,002

INGREDIENT MIXING BOWL AND EVACUATION SYSTEM

Robert J. Reese, St. Charles, and Franklin D. Newkirk, Florissant, both of Mo., assignors to Unidynamics Corporation, New York, N.Y.

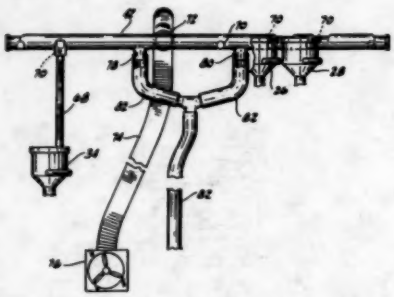
Filed Oct. 1, 1991, Ser. No. 769,961

Int. Cl.[5] B67D *1/16*

U.S. Cl. 222—108 **3 Claims**

1. An overflow evacuation system for mixing bowls in a vending machine for producing and dispensing mixed beverages formed from a mixture of selected dry ingredients and liquids, said system comprising:

a plurality of mixing bowls of generally conical shape each having an open upper portion and forming an outlet spout in their lower portion from which the mixed beverage is expelled, an annular cap covering said upper portion and having a central opening through which said dry ingredients can be introduced, steam evacuation means in said upper portion of said mixing bowl connected to a vacuum source for producing a vacuum for removing steam from said bowl and for removing overflow liquid from said bowl when it becomes clogged;



an evacuation tube interconnected to said evacuation means of each said mixing bowl, said tube being connected to said vacuum source and having at least one liquid outlet means downstream of said mixing bowl and upstream of said vacuum source for removing liquid from said tube;

said evacuation tube having a first tube portion disposed generally horizontally and having a plurality of inlets each connected to a respective steam evacuation means of each said mixing bowl, a second tube portion connecting said vacuum source with said first tube portion through an inlet in a side portion of the first tube portion, and at least one drain port in a bottom portion of the first tube portion.

5,192,003

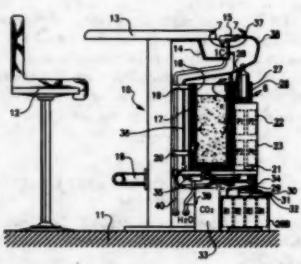
BEVERAGE BAR STRUCTURE AND SYSTEM

Chris L. Billings, 527 Miller Ave., Layton, Utah 84041

Filed Jan. 13, 1992, Ser. No. 820,197

Int. Cl.[5] B67D *5/56*

U.S. Cl. 222—129.1 **14 Claims**



13. In combination, a beverage dispenser system, a pumping unit coupled to said beverage dispenser system for delivering pressured beverage liquids to said beverage dispenser system, a series of beverage liquid supplies coupled to said pumping unit to be pumped by said pumping unit, a container well upstanding from said pumping unit, and an ice chest releasably supporting said pumping unit and container well.

5,192,004

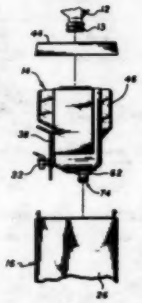
BOTTLED WATER STATION WITH REMOVABLE RESERVOIR

Bruce D. Burrows, Valencia, Calif., assignor to Ebtech, Inc., Columbus, Ohio

Filed Apr. 22, 1991, Ser. No. 688,861

Int. Cl.[5] B67D *5/62*

U.S. Cl. 222—146.1 **27 Claims**



1. A water station, comprising:

a reservoir module including a hollow reservoir for receiving and storing a supply of water and faucet means for dispensing water from said reservoir;

a station housing having support means for receiving and supporting said reservoir module, said station housing including a temperature control probe; and

means for sealed reception of said probe through an opening formed in said reservoir module to contact water within said reservoir, when said reservoir module is supported by said station housing support means, said reservoir module being removable as a unit from said station housing;

said station housing further including means for controlling the temperature of said probe to correspondingly control the temperature of the water within said reservoir.

5,192,005

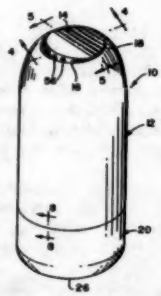
CONDIMENT SHAKER

Larry G. Zimmerman, Champaign, Ill., assignor to Dart Industries Inc., Deerfield, Ill.

Filed Aug. 1, 1991, Ser. No. 739,264

Int. Cl.[5] B65D *47/00*

U.S. Cl. 222—148 **22 Claims**



1. A condiment shaker comprising a hollow body adapted to contain a condiment for selective dispensing thereof, an opening defined through said body, wall means peripherally encircling said opening, a lid for said opening received within said wall means, said lid including a top panel generally coextensive with said opening, and a peripheral flange depending from said

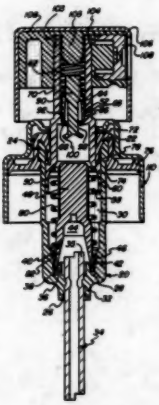
top panel and terminating in an inner edge, said peripheral flange being received within said wall means in sufficiently close peripheral proximity thereto to substantially preclude discharge of shaker contents therebetween, said lid including a dispensing section and a pressure section extending from said dispensing section and defining a pivot line therebetween, a first portion of said lid flange, within said dispensing section, including dispensing slot means defined therein and extending transversely between said inner edge and said top panel, and pivot means mounting said lid in said opening for pivotal movement along said pivot line of said lid between a dispensing position and a closed position; said dispensing slot means in said dispensing position of said lid being positioned at least partially outward of said hollow body and said opening wall means and defining a through passage outward from said hollow body to the exterior of said hollow body for a dispensing of a condiment therefrom, said lid flange peripherally beyond said first portion being in substantially sealed engagement with said opening wall means; said dispensing slot means in said closed position of said lid being positioned within said opening and in transverse alignment with a corresponding portion of said opening wall means to preclude dispensing through said slot means.

5,192,006

LOW PROFILE PUMP

Owen F. Van Brocklin, Bristol, and Glenn W. McGarvey, Watertown, both of Conn., assignors to Risdon Corporation, Naugatuck, Conn.

Filed May 1, 1991, Ser. No. 694,418
Int. Cl.[5] B65D *88/54*
U.S. Cl. 222—321 **25 Claims**



1. A pump for dispensing liquids from a container, comprising:

a hollow body having upper and lower ends having openings therein;

a lower valve located in and adapted to close said opening in said lower end of said body during an increase in pressure inside said hollow body and to open said opening in said lower end during a decrease in pressure inside said hollow body, said lower valve having an upper end extending upwardly inside said body;

a hollow piston fitted into said upper end of said body and retained in and slidable reciprocally with sealing fit in said body against a spring bias, said piston having upper and lower ends having openings therein, said piston having an upper chamber and a lower chamber connected together, said lower chamber having a diameter which is less than the diameter of said upper chamber;

an upper valve fitted into and slidable reciprocally inside said piston and having a sealing portion sized for frictional fit inside said lower chamber of said piston, said sealing portion being sized to provide a clearance between said sealing portion and said upper chamber of said piston, said upper valve being movable from said lower chamber to said upper chamber to vent said body during an increase in pressure inside said hollow body and being movable from said upper chamber to said lower chamber to close said body during a decrease in pressure inside said hollow body, said upper valve further comprising a central stem extending downwardly, said stem having a length selected such that said stem will contact said upper end of said lower valve during the terminal portion of a downward stroke of said piston and an initial portion of an upward stroke of said piston whereby said upper valve is held open during said terminal portion of said downward stroke of said piston and said initial portion of said upward stroke of said piston; and

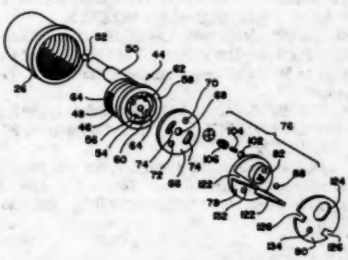
means for biasing said upper valve against upward movement, said biasing means having biasing force selected to operate in conjunction with frictional forces between said sealing portion of said upper valve and said lower chamber to keep said upper valve closed during an increase in pressure inside said body until said frictional force is released when said upper valve is caused to slide upwardly against said biasing means into said upper chamber of said piston to thereby vent said body, and thereafter when pressure in said body has decreased to return said upper valve from said upper chamber to said lower chamber to close said body.

5,192,007

VALVE ASSEMBLY FOR INVERTED DISPENSING FROM A CONTAINER WITH A PUMP

Leonard A. Blomquist, Williamsburg, Va., assignor to Continental Plastic Containers, Inc., Norwalk, Conn.

Filed Dec. 21, 1990, Ser. No. 631,958
Int. Cl.[5] B67D *5/00*
U.S. Cl. 222—376 **20 Claims**



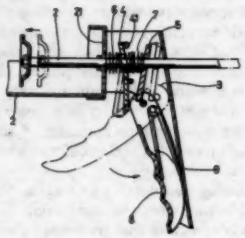
1. A valve assembly for an adapter for coupling a manual pump to a container for dispensing a liquid from such container with such container in an inverted position, said valve assembly comprising a disc adapted to seal a pump from a container body, a valve unit carried by said disc and including a vent passage and a liquid passage through said disc, a floating check valve for closings aid vent passage only in an inverted position of said valve unit, and a spring loaded check valve seated against said liquid passage when said container is in an upright position, said spring loaded check valve being loaded for unseating by liquid pressure from liquid seated thereof when said container is in an inverted position.

5,192,008

PULLING MECHANISM OF AN ADHESIVE-DISPENSING GUN

Chi-Chuan Hwan, Chunghua Hsien, Taiwan, assignor to Dai Shyun Enterprise Co., Ltd., Changhua Hsien, Taiwan

Filed Jan. 23, 1992, Ser. No. 824,394
Int. Cl.[5] B67D *5/42*
U.S. Cl. 222—391 **1 Claim**



1. An improved pulling mechanism of an adhesive-dispensing gun, comprising a gun barrel having rear wall, a gun base, a trigger and a push rod, said push rod extending through said rear wall of said gun barrel, said pulling mechanism being characterized in that a stopper plate and a push plate are fitted on said push rod between said rear wall and said gun base, a first spring being disposed on said push rod between said rear wall and said stopper plate, a second spring being disposed on said push rod between said stopper plate and said push plate, a pivot rod being welded at the upper end of said stopper plate on two lateral walls of said gun base, said stopper plate being formed with a hole through which said push rod extends and formed with a lower bent portion which contacts said trigger, said push plate being formed with a hole through which said push rod extends, the lower end of said push plate contacting said trigger to be driven thereby, a torque spring being disposed on a pivot of said trigger to restore said trigger back to its home position after triggered, whereby said stopper plate is pushed out of the stopping position and said push rod is free from any force so that no excessive adhesive will be further dispensed and said push rod can be freely pulled back.

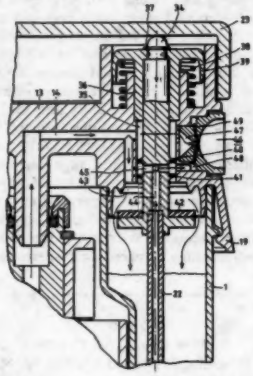
5,192,009

DEVICE FOR SPRAYING FLUIDS, HAVING ELECTRICALLY OPERATED AIR COMPRESSOR AND FREE BLOWING NOZZLE

Bodo Hildebrandt, Riedstadt; Detlef Mattinger, Bickenbach, and Karl Trinkaus, Darmstadt, all of Fed. Rep. of Germany, assignors to Wella Aktiengesellschaft, Darmstadt, Fed. Rep. of Germany

PCT No. PCT/EP90/01051, § 371 Date Feb. 11, 1991, § 102(e) Date Feb. 11, 1991, PCT Pub. No. WO91/00149, PCT Pub. Date Jan. 10, 1991
PCT Filed Jun. 30, 1990, Ser. No. 656,054
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1989, 392143; Jun. 30, 1989, 8907976[U]; Jun. 30, 1989, 8907977[U]
Int. Cl.[5] B65D *83/00*
U.S. Cl. 222—400.5 **32 Claims**

1. A device for spraying of fluids, comprising an electrically driven air pump; a switch for actuating said air pump; a container for a fluid to be sprayed; a nozzle having inlet air and fluid openings; a compressed air duct communicating the inlet air opening with said air pump; a fluid conduit communicating the inlet fluid opening with an interior of said container; a valve having a control cylinder including a first opening which is in communication with said inlet air opening of said nozzle, a second opening which is in communication with said inlet fluid opening of said nozzle, and a third opening which is in communication with an air space of said container, and a control piston axially displaceable in said control cylinder for controlling flow through said first and second openings and having at least one circumferential sealing ring engaging an inner wall of said control cylinder, said air pump being actuated in response to actuation of said switch to provide for air flow from said compressed air duct into the interior of said container and for fluid flow into said inlet fluid opening of said



nozzle said valve deactivating said switch after communication between said compressed air duct and the interior of said container and between said fluid conduit and said inlet fluid opening is blocked by said valve at an end of a spraying process.

5,192,010

LOAD SUPPORTING DEVICE USEFUL AS A FISH STRINGER

William J. Green, 3821 Barbara Way, Salt Lake City, Utah 84124

Filed Jul. 1, 1991, Ser. No. 723,748
Int. Cl.[5] A01K *65/00*
U.S. Cl. 224—103 **5 Claims**

1. A fish stringer carrier for holding and carrying fish comprising: a canted receiver arm to accept the fish in through the gills and out through the mouth and having a receiver neck, a carrier arm provided with an upper clip attachable to an external object and having a lower, depending cam loop, and a receiver loop integral with and interposed between said receiver arm at said receiver neck and said carrier arm at said depending cam loop, said receiver arm being angulated upwardly and outwardly above the horizontal and provided said receiver neck which overlaps at an acute angle and partially twists about said depending cam loop whereby fish from the force of gravity can slide down the receiver arm between and

past said receiver neck and said cam loop at such overlap and onto said receiver loop with no further action from the user.

5,192,011

DEVICE FOR SEPARATING BLANKS FOR PACKAGES FROM A SHEET OF BLANKS

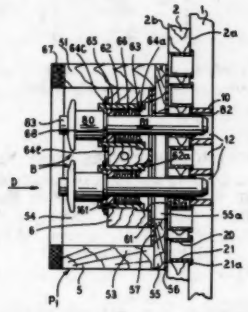
Werner Fuchs, Lausanne, Switzerland, assignor to Bobst SA, Switzerland

Filed Apr. 10, 1991, Ser. No. 683,075

Claims priority, application Switzerland, Apr. 10, 1990, 01220/90

Int. Cl.[5] B26F *3/02*

U.S. Cl. 225—97 **15 Claims**



1. In a device for separating blanks formed in a sheet of material, which blanks will be subsequently formed into packages, said device comprising an upper vertical movable tool provided with several punches which are adjustably positioned on the upper tool and have adjustable dimensions and a lower fixed tool provided with several apertures corresponding in their position and dimensions to the punches so that the punches will push a blank through the apertures, the improvements comprising the upper tool comprising a first plate member having a plurality of holes being arranged in a pattern, each punch being provided with quick-locking means for pressing an upper surface of the punch under an elastic load against a lower surface of the first plate member, said quick-locking means including a first end engaged within the punch and a second end extending through a hole in said first plate member, and a second plate member being secured to an upper surface of the first plate member, said second plate member having enlarged apertures encompassing several holes in the first plate member and having separate openings aligned with other holes of the first plate member, which other holes are not encompassed by said apertures of the second plate member.

5,192,012

NAIL DRIVING TOOL

Manfred Schafer, Bad Homburg; Alfred Schneider, Langen; Horst Tacke, Bad Vilbel, and Gerhart Hartmann, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to ITW Befestigungssysteme GmbH, Eschborn-Niederhochstadt, Fed. Rep. of Germany

Filed Dec. 5, 1991, Ser. No. 802,573

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1990, 9016493[U]

Int. Cl.[5] B25C *1/00*

U.S. Cl. 227—113 **10 Claims**

1. A nail driving tool, comprising:

a magazine for housing a plurality of serially disposed nails, said magazine including a guide path along which said plurality of serially disposed nails are moved, and an outlet opening through which said plurality of serially disposed nails are serially conveyed from said guide path;

a discharge channel, disposed adjacent to said outlet opening of said guide path, through which a leading one of said plurality of serially disposed nails, conveyed through said outlet opening of said guide path, is discharged;

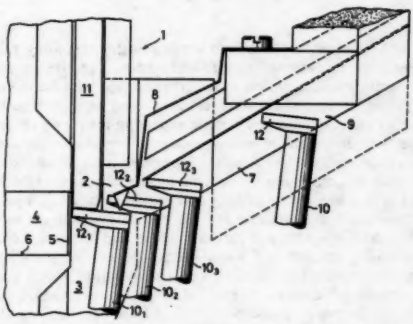
means for engaging said leading one of said plurality of serially disposed nails which is disposed within said discharge channel for discharging said leading one of said plurality of serially disposed nails through said discharge channel; and

a cantilevered leaf spring having a first proximal end thereof fixedly mounted upon said magazine and an opposite, distal free end thereof engaged with a nail, of said plurality of serially disposed nails, which is disposed immediately upstream of said leading one of said serially disposed nails disposed within said discharge channel, for retaining all of said plurality of serially disposed nails disposed within said guide path and upstream of said leading one of said serially disposed nails disposed within said discharge channel.

4. A nail driving tool, comprising:

a magazine for housing a plurality of serially disposed nails, said magazine including a guide path along which said plurality of serially disposed nails are moved, and an outlet opening through which said plurality of serially disposed nails are serially conveyed from said guide path;

a discharge channel, disposed adjacent to said outlet opening of said guide path, through which a leading one of said plurality of serially disposed nails, conveyed through said outlet opening of said guide path, is discharged;

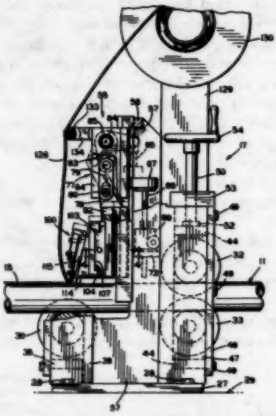


means for engaging said leading one of said plurality of serially disposed nails which is disposed within said discharge channel for discharging said leading one of said plurality of serially disposed nails through said discharge channel;

a cantilevered leaf spring having a first proximal end thereof fixedly mounted upon said magazine and an opposite, distal end thereof engaged with a nail, of said plurality of serially disposed nails, which is disposed immediately upstream of said leading one of said plurality of serially disposed nails disposed within said discharge channel, for retaining all of said plurality of serially disposed nails disposed within said guide path and upstream of said leading one of said plurality of serially disposed nails disposed within said discharge channel; and

magnet means disposed upon a side of said discharge channel which is opposite the side upon which said outlet opening of said guide path is disposed and within the vicinity of said leading one of said plurality of serially disposed nails for retaining said leading one of said plurality of serially disposed nails within said discharge channel in preparation of said discharge of said leading one of said plurality of serially disposed nails from said discharge channel by said means for engaging said leading one of said plurality of serially disposed nails.

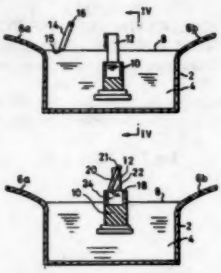
5,192,013
SCARFING APPARATUS
Nelson D. Abbey, III, Monclova, and Timothy J. Lewandowski, Swanton, both of Ohio, assignors to Abbey Etna Machine Company, Perrysburg, Ohio
Filed Sep. 20, 1991, Ser. No. 763,338
Int. Cl.[5] B23K *37/08*
U.S. Cl. 228—13 8 Claims



3. Apparatus for scarfing a longitudinally extending raised bead from the outer surface of an advancing elongated member comprising a base, rollers mounted upon said base for advancing said elongated member along a predetermined path, a carrier member mounted for reciprocating movement toward and away from said advancing elongated member, a mounting block, pivotally interconnected elongated linkage means connecting said mounting block to said carrier member, said linkage means selectively affixing said mounting block in a predetermined position relative to said carrier member for movement in unison with said carrier member and for reciprocating movement toward and away from said carrier member, a traveling support block carried by said mounting block, means for moving said support block relative to said mounting block and transversely of said path, and at least one scarfing blade carried by said support block, said scarfing blade having at least one cutting edge adapted to scarfingly engage said surface and sever said raised bead from said advancing member, the rollers including a first said roller over which said elongated member passes and positioned beneath the point at which said cutting edge scarfingly engages said surface, an associated pair of cooperating second said rollers positioned to receive said elongated member therebetween following scarfing of said raised bead, and means for adjusting the elevation of said pair of second rollers relative to said first roller.

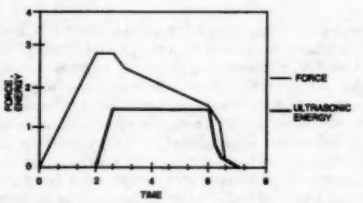
5,192,014
DIP SOLDERING APPARATUS
Alexander J. Ciniglio, and Neil C. Squire, both of Essex, Great Britain, assignors to Pillarhouse International Limited, Great Britain
Filed Oct. 15, 1991, Ser. No. 775,747
Claims priority, application United Kingdom, Oct. 15, 1990, 9022333; Oct. 15, 1990, 9022336
Int. Cl.[5] B23K *1/00*
U.S. Cl. 228—34 6 Claims

1. Soldering apparatus comprising a bath for containing molten solder, a pot movable from beneath a surface of the solder in the bath, and scraper means for scraping the surface of the solder in the bath before the pot is moved upwards through the surface, and for scraping an upper surface of the pot after it has moved upwards through the surface of the solder in the bath, wherein the scraper means comprises two



blades, a first blade to scrape the surface of the solder in the bath, and a second blade to scrape the surface of the pot.

5,192,015
METHOD FOR WIRE BONDING
Lloyd D. Ingle, Lompoc, and John D. Koontz, Santa Barbara, both of Calif., assignors to Santa Barbara Research Center, Goleta, Calif.
Filed Nov. 20, 1991, Ser. No. 795,416
Int. Cl.[5] H01L *21/607*
U.S. Cl. 228—111 8 Claims



1. A method for bonding a first article to a second article at a selected location, using a wire bonding technique in which a bonding force and ultrasonic energy are applied at the location simultaneously, the method comprising the steps of:

furnishing a first article and a second article, at least one of the first article and the second article being sufficiently soft that it deforms when the bonding force is applied independently of applied ultrasonic energy;

placing the first article over the second article;

positioning the first article and second article between a pair of bonding tools, with the bonding tools at a selected location of the first article and second article where bonding is to be achieved;

pressing the selected location of the first article and second article between the pair of bonding tools with an applied force, the applied force increasing from zero to a prebonding force, maintaining the prebonding force for a prebonding force period of time, thereafter changing the applied force from the prebonding force to a bonding force, and thereafter decreasing the force from the bonding force to zero; and

applying ultrasonic energy to the selected location through at least one of the bonding tools, the ultrasonic energy increasing to a prebonding energy during the period that the force is being increased from zero to the bonding force, maintaining the prebonding energy for a prebonding energy period of time, thereafter changing the ultrasonic energy to a bonding energy prior to the time that the applied force is decreased from the bonding force to zero, and thereafter decreasing the ultrasonic energy to zero.

5,192,016

METHODS FOR MANUFACTURING TUBES FILLED WITH POWDERY AND GRANULAR SUBSTANCES

Nobuo Araki; Takeji Kagami; Yoji Chatani; Shunichi Kikuta; Iwao Yamada; Masao Kamada; Seiji Hashimoto; Shuichi Ueno, all of Tokyo; Takeshi Fukui, Fukuchiyama; Takumi Nakamura, Tokyo; Nobuo Mizuhashi, and Yasushi Ishikawa, both of Sagamihara, all of Japan, assignors to Nippon Steel Corporation and Nippon Steel Welding Products & Engineering Co., Ltd., both of Tokyo, Japan

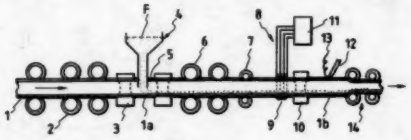
PCT No. PCT/JP91/00836, § 371 Date Feb. 21, 1992, § 102(e) Date Feb. 21, 1992, PCT Pub. No. WO91/19590, PCT Pub. Date Dec. 26, 1991

PCT Filed Jun. 21, 1991, Ser. No. 835,957

Claims priority, application Japan, Jun. 21, 1990, 2-161398; Jun. 21, 1990, 2-161399; Jun. 25, 1990, 2-164260

Int. Cl.[5] B23K *13/02*

U.S. Cl. 228—147 **13 Claims**



1. A method of continuously manufacturing tubes filled with a powdery and/or granular substance by forming a metal strip fed in the longitudinal direction thereof into an unwelded tube (*1a*) with forming rolls (2), feeding a powdery and/or granular substance (F) through an opening in the unwelded tube (*1a*) being formed, butt welding the fringing edges of the opening, and reducing the diameter of the welded tube (*1b*) which is characterized in that:

the minimum allowable heat input below which cold cracking occurs and the maximum allowable heat input above which spatters not smaller than 0.83 times the inside diameter of the finished tube are expelled in the butt welding are determined beforehand; and

the butt welding is performed with a heat input that is greater than the minimum allowable heat input and smaller than the maximum allowable heat input.

5,192,017

Patent Not Issued For This Number

5,192,018

WIRE BONDING METHOD

Yoshimitsu Terakado, and Nobuto Yamazaki, both of Tokyo, Japan, assignors to Kabushiki Kaisha Shinkawa, Tokyo, Japan

Filed Feb. 27, 1992, Ser. No. 842,257

Claims priority, application Japan, Feb. 27, 1991, 3-53700

Int. Cl.[5] B23K *31/02*

U.S. Cl. 228—179 **3 Claims**

1. A wire bonding method comprising the ordered steps of:

bonding an end of a bonding wire to a first bonding point;

unclamping said bonding wire;

raising a capillary to a first predetermined point above said first bonding point;

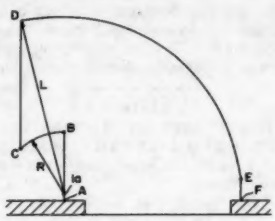
stopping said capillary temporarily at said first predetermined point;

moving said capillary through a circular arc of a constant radius in a direction opposite to that of a second bonding point to a second predetermined point;

raising said capillary to a third predetermined point above said second predetermined point a distance sufficient to form a bonding wire loop;

clamping said bonding wire;

moving said capillary through another circular arc of another constant radius to a forth predetermined point above said second bonding point;



lowering said capillary to said second bonding point; and

bonding said bonding wire to said second bonding point.

5,192,019

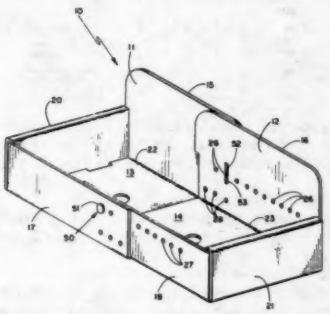
PACKAGE PRODUCT DISPLAY BOX HAVING ADJUSTABLE LENGTH FEATURE

Kermit E. Meehan, Wayzata, Minn., assignor to The Mike Meehan Company, Plymouth, Minn.

Filed Jun. 18, 1992, Ser. No. 900,353

Int. Cl.[5] B65D *5/32*

U.S. Cl. 229—101 **2 Claims**



1. In a point-of-purchase product display receptacle assembly comprising nesting and telescoping first and second mating receptacle segments adapted to mate together to form an open-top display container with each of said segments having a back panel, upstanding side and end flaps, said receptacle segments being characterized in that:

(a) said first receptacle segment comprising a generally rectangular parallelepipedon with a back panel, a pair of side flaps extending from said back panel and forming opposed juncture lines with said back panel, and one end flap extending at right angles from said back panel to form an open-end female segment;

(b) said second receptacle segment comprising a generally rectangular parallelepipedon with a back panel, a pair of side flaps extending from said back panel and forming opposed juncture lines with said back panel; and one end flap extending at right angles from said back panel to form an open-end male segment, with the one end flap of the male segment being arranged in oppositely disposed relationship to the end flap of said female segment;

(c) spaced-apart rows of aligned bores formed in the side flaps of said first and second receptacle segments and being disposed along row axes generally parallel to said opposed juncture lines and including an upper row and a lower row with the axes of each of the respective rows positioned to be aligned with a corresponding row on the

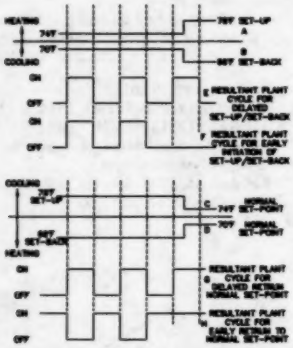
other mating receptacle segment, and with the number of bores disposed along the axes closer to each of said opposed juncture lines being substantially fewer in number than those disposed more remote to each of said opposed juncture lines, the arrangement being such that the receptacle segments may be telescopically engaged one to the other in a predetermined selected relationship.

5,192,020

INTELLIGENT SETPOINT CHANGEOVER FOR A PROGRAMMABLE THERMOSTAT

Dipak J. Shah, Eden Prairie, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 8, 1991, Ser. No. 789,503
Int. Cl.[5] G05D *23/19*
U.S. Cl. 236—46 R **18 Claims**



1. An apparatus to match initiation of temperature changeover settings of a thermostat to a duty cycle of an air temperature conditioning plant without degrading comfort level comprising:

a programmable changeover thermostat;

an input means for programming said thermostat with changeover temperature settings at selectable time of day periods;

a clock means to determine time of day;

a timing means for determining the length of time of an "on" portion and an "off" portion of said duty cycle of said air temperature conditioning plant;

a comparison means to determine a time until an upcoming temperature conditioning plant cycle;

a means to advance or delay said temperature changeover until the beginning of the upcoming "on" period or upcoming "off" period of the upcoming duty cycle or the last "on" period or the last "off" period of the last duty cycle of said air temperature conditioning plant when the time until the upcoming temperature changeover is less than the time of the last "on" period duty cycle or less than the time of the last "off" period duty cycle of said air temperature conditioning plant.

5,192,021

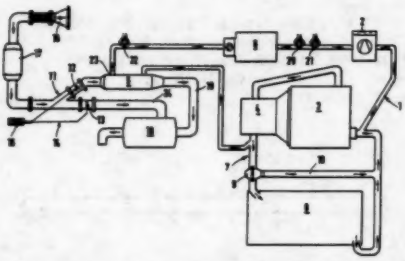
ARRANGEMENT FOR HEATING PASSENGER AREAS OF VEHICLES

Richard Meier, Stein, and Herbert Knorr, Rednitzhembach, both of Fed. Rep. of Germany, assignors to MAN Nutzfahrzeuge Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 22, 1991, Ser. No. 748,639
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1990, 4026595
Int. Cl.[5] B60H *1/18*
U.S. Cl. 237—2 A **2 Claims**

1. An arrangement for heating the passenger area of a vehicle, including a warm water circuit means which serves for the transfer of heat and in which are connected, in series, an internal combustion engine, a torque converter transmission, an exhaust gas heat exchanger, and heating units for said passenger area, said arrangement further comprising:

an exhaust gas diverter that is disposed upstream of said exhaust gas heat exchanger and is controllable via valve means for selective conveyance of exhaust gas through said exhaust gas heat exchanger or directly via an exhaust gas pipe to a muffler, with a downstream side of said exhaust gas heat exchanger communicating with said muffler;



a linkage system and a compressed air cylinder for operating said valve means of said exhaust gas diverter;

thermal-lag switch means disposed in said warm water circuit means for controlling said compressed air cylinder;

a catalytic converter disposed upstream of said exhaust gas heat exchanger between an exhaust manifold of said internal combustion engine and said exhaust gas diverter; and

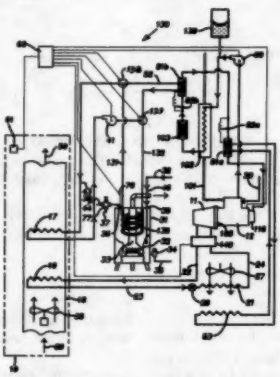
a burner heating means disposed in said warm water circuit means downstream of said exhaust gas heat exchanger.

5,192,022

FUEL-FIRED HEAT PUMP SYSTEM

Paul F. Swenson, Shaker Heights, Ohio, assignor to Consolidated Natural Gas Service Company, Inc., Pittsburgh, Pa.

Filed May 26, 1992, Ser. No. 888,910
Int. Cl.[5] F25B *27/00*
U.S. Cl. 237—2 B **12 Claims**



1. A heat pump system for an occupied space of a building comprising a fuel-fired heat engine and a heat pump compressor driven by the heat engine, the mechanical horsepower output capacity of the engine being substantially equal to the input power requirement of the compressor, an indoor refrigeration circuit heat exchanger in thermal communication with air in the occupied space, and an outdoor refrigeration circuit heat exchanger in thermal communication with the outdoor environment of the building, a refrigerant circuit connecting

the refrigeration heat exchangers and the compressor to permit the compressor to pump heat between the heat exchangers when operated by the engine, a heat storage medium for absorbing heat rejected by the engine during its operation, the heat storage medium having a capacity to store a substantial quantity of heat for a period at least substantially as long as a maximum expected time that the engine is inoperative between ordinary cycles of operation, and means for selectively transferring said substantial quantity of heat stored in the storage medium to the engine to preheat the engine, after it has been at rest for a time sufficient to cool off, to a temperature substantially equal to its operating temperature.

5,192,023

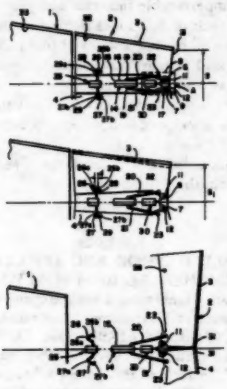
JET ENGINE PROVIDED WITH A THRUST REVERSER

Etienne Fage, Ramatuelle, and Jean-Pierre Lair, Plaisance, both of France, assignors to The Dee Howard Company, San Antonio, Tex.

Division of Ser. No. 263,224, Oct. 27, 1988, Pat. No. 4,966,327. This application Aug. 24, 1990, Ser. No. 573,481

Int. Cl.[5] F02K *1/10, 1/12*

U.S. Cl. 239—11 **1 Claim**



1. A method of reversing the thrust of a jet engine and varying the cross-sectional area of the throat of an ejection nozzle for said jet engine in a target door reversing system comprising the steps of:

(a) pivoting a thrust reverser target door means of a jet engine between stowed and deployed positions with an actuator means, said target door means defining it its stowed position at least a portion of the throat of the ejection nozzle of the jet engine and in its deployed position at least a portion of a target door reverser,

(b) selectively retaining said target door means in its stowed position,

(c) independently and selectively moving said thrust reverser target door means while in its stowed position between at least first and second limiting position to vary the cross-sectional area of the throat of said ejection nozzle between respective minimum and maximum values, said door retaining means permitting sufficient movement of said thrust reverser door when it is selectively moved between said first and second limiting positions, and for controlled varying of the area of the throat,

(d) said thrust reverser door functioning when deployed to reverse the thrust of the jet engine exiting the ejection nozzle during thrust reversing operation and also being effective while remaining stowed to vary the cross-sectional area of the throat of the throat of the ejection nozzle of the jet engine to thereby permit optimization of engine thrust to suit different engine operating regimes.

5,192,024

SPRINKLER

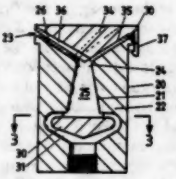
Leonard J. Blee, 66 Leslie Ave., Blair Athol, Australia 5084

Filed Sep. 16, 1991, Ser. No. 760,404

Claims priority, application Australia, Sep. 17, 1990, PK 2371; Jun. 25, 1991, PK 6875

Int. Cl.[5] B05B *3/08*

U.S. Cl. 239—222.21 **14 Claims**



1. A sprinkler useful as an irrigation device comprising a body containing an annular surface extending from an upstream end to a discharge end, including a throat intermediate said ends, a generally conical surface diverging from said throat to said discharge end, and fair surfaces in the region of said throat,

swirl imparting surfaces at the upstream end of said generally conical surface, and

an impeller in a conical depression having a generally conical surface, diverging in a discharge direction and substantially complementary in shape to said diverging conical surface to said body, so that, in use, most of the impeller surface lies contiguous with said diverging conical body surface, said impeller conical surface containing surfaces defining a plurality of discharge channels extending outwardly from near its center, said discharge channels being of size and shape to be co-operable with said diverging conical body surface to confine water when discharging into respective coherent water jets.

5,192,025

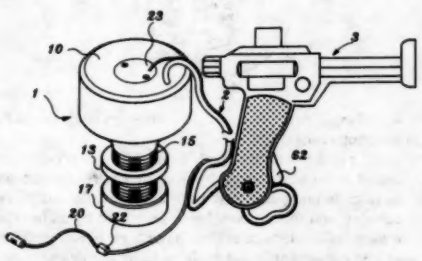
ELECTRIC WATER JET FOR AUTOMOBILE

Ming-Thy Hu; Yun-Wen Hwang, both of 3 Fl., No. 11, 62 Lane, Wan-Lung St., Chin-Mei District, Taipei; Min-Shang Hwang, 5 Fl., No. 12, 393 Lane, Chung-Shan Rd., Hsinchu, and Eong-Chau Sheen, No. 19, 60 Lane, Jen-Ai St., Chin-Tung Tsun, Lin-Chia Village, Tainan Hsien, all of Taiwan

Filed Jul. 19, 1991, Ser. No. 733,193

Int. Cl.[5] B05B *9/03*

U.S. Cl. 239—394 **2 Claims**



1. An electric water spray gun system comprising:

a) a floatable intake device having a body made of lightweight material having a stem portion extending therefrom; a plurality of weight rings engaging the stem portion by threads for adjustment of the center of gravity of the floatable intake device by adjusting at least one of the position and number of such weight rings; a filter ring

having a plurality of filter elements of different filtration sizes arranged thereon so as to cover an opening defined at a lower end of the stem portion which opening serves as an inlet port; a first d.c. motor located in an upper section of a passage defined within the body, a lower section of the passage serving as a water inlet passage and an upper section serving as a first water outlet port; a first vane fixed to a drive shaft of the first d.c. motor; a first wall between the first vane and the first d.c. motor; a check valve located in the passage at the first water outlet port; a retention plate to attach the first d.c. motor to the body; and a power cord extending from the first d.c. motor and adapted to engage a d.c. power source;

b) an electric spray gun having a gun body defining a generally "L" shaped water passage with a second water inlet port at one end and a second water outlet port at another end; a second d.c. motor located at the turning point of the water passage; a second vane fixed to a drive shaft of the second d.c. motor to pump and change direction of water flow approximately 90 degrees; a nozzle adjacent to the second water outlet port to spray out the water from the outlet port; a second power cord extending from the second d.c. motor and adapted to engage a d.c. power source; and

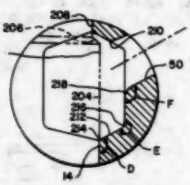
c) a hose connecting the first water outlet port of the floatable intake device to the second water inlet port of the spray gun.

5,192,026

FUEL INJECTORS AND METHODS FOR MAKING FUEL INJECTORS

David M. Rix, Columbus, and Christine M. Yingling, North Vernon, both of Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Mar. 29, 1990, Ser. No. 501,023
Int. Cl.[5] F02M *61/18*
U.S. Cl. 239—533.3 **1 Claim**



1. A fuel injector for an internal combustion engine, said fuel injector comprising:

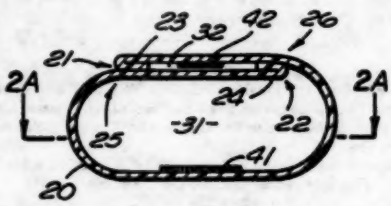
a body having a fuel flow path defined by a first bore intersected at an acute angle by a second bore, the sidewall surface defining said first bore and the sidewall surface defining said second bore being separated by an interface region, said interface region having an acute angle side and an obtuse angle side as dictated by the intersection of the first and second bores, said acute angle side of said interface region including a radiused surface portion disposed between the sidewall of said first bore and the sidewall of the second bore, and the obtuse angle side of said interface region including three transition surface portions, the one closest to said second bore sidewall surface being radiused.

5,192,027

DRIP IRRIGATION DEVICES AND PLASTIC FILMS WITH COPPER POWDER INCORPORATED

Daniel W. C. Delmer, 17067 Roundhill Dr.; Robert J. Delmer, 16922 Pacific Coast Hwy., #204, and William A. Delmer, 16901 Bedford La., all of Huntington Beach, Calif. 92649

Filed Feb. 11, 1992, Ser. No. 834,006
Int. Cl.[5] B05B *1/02, 15/00*
U.S. Cl. 239—542 **3 Claims**



1. A multichamber drip irrigation hose, comprising

a larger primary tube and a smaller secondary tube of flexible water impermeable material and joined at a common wall, with each of said tubes having an inner surface,

said common wall having a series of first passages facing the interior of said primary tube in communication with the interior of said secondary tube,

said secondary tube having a series of second passages leading from the interior of said secondary tube to the exterior, and

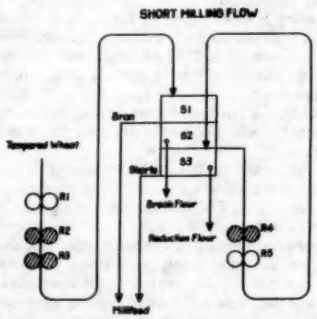
copper powder adhered to at least one of said inner surfaces along the length of the hose.

5,192,028

SIMPLIFIED METHOD AND APPARATUS FOR PRODUCING WHITE FLOUR FROM WHEAT GRAIN

Steven P. Curran, Manhattan, Kans., assignor to Kansas State University Research Foundation, Manhattan, Kans.

Continuation of Ser. No. 625,085, Dec. 10, 1990, Pat. No. 5,114,079. This application Nov. 19, 1991, Ser. No. 794,241
The portion of the term of this patent subsequent to May 19, 2009, has been disclaimed.
Int. Cl.[5] B02C *9/04*
U.S. Cl. 241—3 **50 Claims**



1. Apparatus for processing wheat to produce wheat flour by substantially removing the bran layer and germ portion from the endosperm portion of the wheat grains, said apparatus comprising:

a pair of compression rolls for receiving wheat to be processed therebetween, said compression rolls being in spaced relationship and the surfaces thereof configured to

flatten the individual grains of wheat without substantial comminution thereof;

a first pair of corrugated breaking rolls positioned to receive the flattened grains of wheat directly from the compression rolls without intermediate processing of the wheat grains, and to break said wheat grains,

said first breaking rolls each being provided with at least about 20 surface corrugations per circumferential inch of the outer circumference thereof;

a second pair of corrugated grinding rolls positioned to receive broken wheat grains directly from said first pair of breaking rolls, said grinding rolls each having a greater number of circumferentially arranged corrugations than the number of corrugations on said breaking rolls,

said breaking rolls and grinding rolls being operable to produce a comminuted wheat product wherein the bran layer is separated from the endosperm and germ portions; and

classification means for separating at least a portion of the bran fraction from the endosperm and germ portions of the comminuted wheat product.

5,192,029

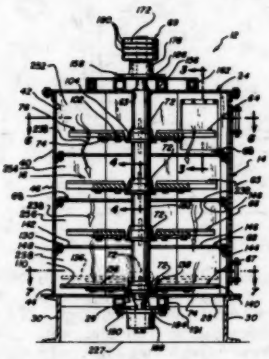
GYROSCOPIC CENTRIFUGE AND MILL APPARATUS AND METHOD OF USE FOR TREATMENT OF SOLID WASTE PRODUCTS

Curtis L. Harris, Denver, Colo., assignor to Universal Entech, A Colorado Corporation, Englewood, Colo.

Filed Feb. 5, 1990, Ser. No. 473,901

Int. Cl.[5] B02C *13/09*

U.S. Cl. 241—27 **20 Claims**



20. A gyroscopic centrifuge and mill apparatus operable to receive, process, impact, separate, and discharge waste/trash material, comprising:

a) a main mill housing assembly to receive and process the waste/trash material therein;

b) a material impact means mounted within said main mill housing assembly to impact and separate the waste/trash material;

c) said material impact means having a plurality of impact blade assemblies mounted in spaced relationship on a drive means for rotation therewith; and

d) each of said impact blade assemblies includes striker blade members which are adjustable about a horizontal plane to various angular relationship to regulate volume and velocity of air flow through said main mill housing assembly.

5,192,030

TWO ROLLER MACHINE, PARTICULARLY A ROLLER PRESS

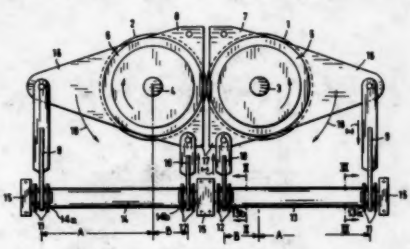
Willy Jakobs, Cologne, Fed. Rep. of Germany, assignor to Kloeckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Jul. 30, 1991, Ser. No. 737,681

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1990, 4024109

Int. Cl.[5] B02C *4/32*

U.S. Cl. 241—101.2 **8 Claims**



1. A two roll mechanism such s a roller press having parallel rollers forming a crushing nip therebetween comprising in combination:

drive gearings connected to drive parallel rollers of a roller press adapted to each rotate about an axis;

torque supports for absorbing the reaction moments of the gearing having a plate member for each roller pivotable about the roller axis and extending longitudinally in opposite directions having an inner end between the rollers and an outer end outwardly of the rollers;

a torsion shaft for each plate member extending longitudinally beneath the torque supports each having an inner end and an outer end and having lever arms at each end to twist the shaft with the load on the gearings;

first rods connecting the lever arms at the outer ends of the torsion shafts to the outer ends of the plate members;

and second rods connecting the lever arms at the inner ends of the torsion shafts to the inner ends of the plate members;

the distance between the axis of each of the rollers and the outer ends of the plate members being greater than the distance between the axis of the rolls and the inner ends of the plate members.

5,192,031

COMBINED TRASH COMPACTOR/CONVEYOR FOR GARBAGE TRUCK

Hervé Gilbert, 299, Parc Industriel, Lac-Etchemin Québec, Canada G0R 1S0

Filed Jul. 5, 1991, Ser. No. 726,234

Int. Cl.[5] B60P *1/00*

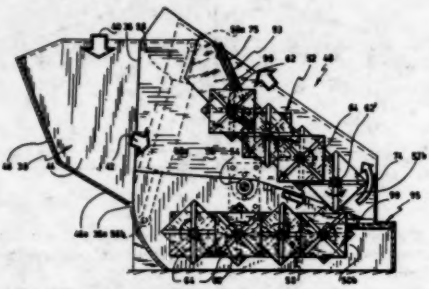
U.S. Cl. 241—101.7 **1 Claim**

1. A trash compactor for use within a box of a garbage collecting truck, said trash compactor comprising:

(a) a first conveyor member, to be carried generally horizontally within said box and defining a front end and a rear end and first top and bottom runs, said first top run for supporting and moving uncompacted trash from an uncompacted, trash intake end, along an intermediate, trash compacting area, to a compacted, trash unloading end;

(b) a second conveyor member, mounted in spaced overlying register with said first conveyor member at an angle relative thereto whereby said conveyor members are configured in a generally V-shape assembly, said second conveyor member also to be located within said box and defining a front end and a rear end and second upper and lower runs; said second lower run moving trash in a frontward direction, to further draw trash movably supported

by said first top run toward said unloading end; said second upper run moving trash in a rearward direction, whereby a compacted trash discharge channel is defined between said front ends of said first and second conveyor members, and whereby said V-shape assembly defines an inner V-shape throat with a large uncompacted trash intake mouth at one end and a narrow, said discharge channel at its opposite end, said trash being progressively wedge-compacted within said V-shape inner throat as said trash moves from said intake mouth toward said discharge channel of said V-shape conveyor members assembly;



(c) first biasing means, for biasing at least part of said compacted trash exiting from said discharge channel toward and over said second conveyor member front end and onto said second upper run, whereby said compacted trash will be moved from said front and towards said rear end of said second conveyor member; and

(d) second biasing means, for biasing said compacted trash on said second upper run at said rear end of said second conveyor member toward and into a first storage area, located at a distance from said conveyor members and to be housed within said garbage box.

5,192,032

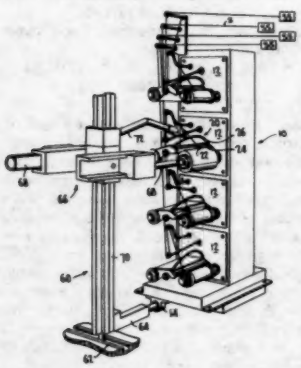
AUTOMATIC WINDING UNIT

Charles W. Brouwer, Greensboro; Roger D. Lang, Gibsonville, and Thomas W. Perrino, Burlington, all of N.C., assignors to John Brown Inc., West Warwick, R.I.

Filed Oct. 31, 1990, Ser. No. 607,653

Int. Cl.[5] B65H *67/04*

U.S. Cl. 242—35.5 A **13 Claims**



1. Method of operating a tension compensator take-up machine including the steps of

(a) advancing at least one strand from a supply to a rotating spindle;

(b) traversing said strand with a traverse means to wind said strand into a package on said spindle;

(c) controlling said strand tension by engaging said strand on a tension compensator arm;

(d) doffing a full strand package by

(i) cutting said strand, thereby initiating the steps of arresting the rotation of said package, releasing said package on said spindle, and moving said traverse means from a wind position to a doff position; and

(ii) removing said package from said spindle;

(e) inserting an empty tube on said spindle;

(f) positioning said strand around said tension compensator arm, thereby restarting said spindle rotation at a pre-set speed, securing said empty tube, moving said transverse means to the wind position; and

(g) bringing said strand across said spindle to engage and retain said strand on said spindle, restarting said winding.

5,192,033

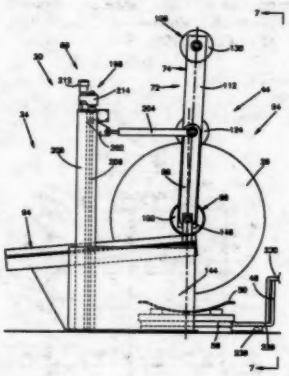
APPARATUS FOR MOVING ROLLS FROM A LOADING STATION TO AN UNWINDING STATION AND FOR MOVING EMPTY ROLL CORES FROM THE UNWINDING STATION TO THE LOADING STATION

George R. Pipes, Salt Lake City, Utah, assignor to Eaton-Kenway, Inc., Salt Lake City, Utah

Filed Feb. 26, 1991, Ser. No. 664,180

Int. Cl.[5] B65H *19/30, 16/02*; B21C *47/24*

U.S. Cl. 242—58.6 **74 Claims**



62. An apparatus for use in sequentially moving rolls of material having cores from a loading station to an unwinding station and for sequentially moving empty roll cores from the unwinding station back to the loading station, said apparatus comprising frame means having a first end portion for holding a first roll by its core during movement of the first roll from the loading station to the unwinding station and for holding the empty core of the first roll during movement of the core of the first roll from the unwinding station back to the loading station, said frame means having a second end portion for holding a second roll by its core during movement of the second roll from the loading station to the unwinding station and for holding the empty core of the second roll during movement of the core of the second roll from the unwinding station to the loading station, said frame means includes a first longitudinal member extending between the first and second end portions of said frame means, and a second longitudinal member extending between the first and second end portions of said frame means, said first and second members extending parallel to each other and being spaced apart from each other by a distance which is at least as great as the axial extent of one of the

rolls to enable the rolls to be sequentially positioned between said members, said first and second members reach having a length which is as great as the distance from the loading station to the unwinding station to enable the second roll to be positioned between the first and second members at the loading station while the empty core of the first roll is disposed between the first and second members at the unwinding station, first lift means at the loading station for supporting a first end portion of the second roll and second lift means at the loading station for supporting a second end portion of the second roll opposite from the first end portion, said first lift means including first motor means to raise the first end portion of the second roll to a position in which a first end portion of the core of the second roll is disposed at the loading station adjacent to as end portion of the first member, said second lift means including second motor means to raise the second end portion of the second roll to a position in which a second end portion of the core of the second roll is disposed at the loading station at the same level as the first end portion of the core of the second roll and is adjacent to an end portion of the second member, control means for determining when a central axis of the core of the second roll is horizontal, said control means including first photoelectric sensor means for detecting light reflected from a first end portion of the core of the second roll while the first end portion of the second roll is supported by said first lift means and second photoelectric means for detecting light reflected from a second end portion of the core of the first roll while the second end portion of the second roll is supported by said second lift means, and drive means for pivoting said frame means about a central axis of the core of the second roll while the second roll is stationary at the loading station to move the empty core of the first roll from the unwinding station toward the loading station.

5,192,034

WINDER FOR WINDING A RUNNING WEB

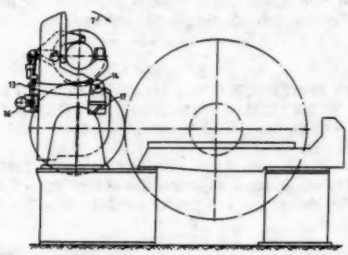
Rudolf Beisswanger, Steinheim, Fed. Rep. of Germany, assignor to J.M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Apr. 4, 1991, Ser. No. 680,316

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1990, 4011010

Int. Cl.[5] B65H *18/16*

U.S. Cl. 242—65 **2 Claims**



1. A winder for winding a running web, comprising:

a frame for said winder, said frame having two sides;

a winding drum on which said web is to be wound into a roll, said web having a width, said winding drum having two ends and having a journal on each of said ends;

a backing roll for said winding drum, said backing roll having a curved shell surface and having a width, said backing roll further having an axis, said width being substantially equal to the width of the web;

a pair of primary levers, each of said primary levers having two ends and having a fork at one end thereof whereby each of said forks receives a separate one of said journals, each of said primary levers being mounted at the other end thereof in closely spaced relationship to said backing roll axis;

said winding drum being swivelable from a first position whereby said winding drum is situated generally above said backing roll in the running direction of the web to a second position, said winding drum approaching said backing roll and passing through a primary section as it passes from said first position to said second position, said web being progressively wound on said winding drum as said drum passes from said first position to said second position;

a pair of secondary levers situated at said second position, said secondary levers being adapted to receive said winding drum from said primary levers as said drum passes to said second position;

a generally horizontal guideway extending from said second position via a secondary section to a third position;

a contact pressure device for forcing said winding drum and said roll being wound thereon onto said backing roll; and

a pair of support beams, each of said support beams having two ends, said two ends of each support beam being mounted on the respective primary levers, one of said support beams being positioned at each side of said frame; each of said support beams being operable by way of controlled movement of at least one end thereof to relieve said winding drum, directly or indirectly, in at least said primary section; said support beams being configured and arranged so that said winding drum, or the journals disposed at the respective ends of said drum, can roll on said beams.

5,192,035

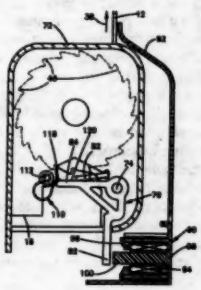
RETRACTOR WITH MANUAL CINCH

William T. Dufour, Sterling Heights, Mich., assignor to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Continuation of Ser. No. 574,750, Aug. 29, 1990, abandoned. This application Nov. 22, 1991, Ser. No. 796,913

Int. Cl.[5] B65H *75/48*

U.S. Cl. 242—107.4 R **14 Claims**



1. A vehicle seat belt retractor comprising:

a spool on which seat belt webbing is wound and which is rotatable in belt withdrawal and belt retraction directions;

at least one spool locking ratchet wheel fixed to said spool for rotation therewith;

a pawl movable into a locking position in engagement with said spool locking ratchet wheel to lock said spool locking ratchet wheel and said spool against rotation in the belt withdrawal direction;

a pawl actuator movable relative to said pawl between a first position and a second position to move said pawl into its locking position;

a manually movable member for engaging said pawl actuator to move said pawl actuator into its second position; and

biasing means directly engaging said pawl actuator and spaced from said pawl, said biasing means biasing said pawl actuator into its first position when said pawl actuator is in its first position and biasing said pawl actuator into

its second position when said pawl actuator is in its second position.

5,192,036

TWO-BEARING REEL

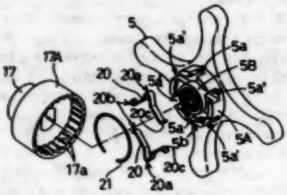
Jun Sato, Sakai, Japan, assignor to Shimano, Inc., Osaka, Japan

Filed Mar. 4, 1991, Ser. No. 663,615

Claims priority, application Japan, Mar. 12, 1990, 2-25446[U]

Int. Cl.[5] A01K *89/015, 89/00*

U.S. Cl. 242—268 **6 Claims**



1. A two-bearing reel comprising:

a drag adjustment control member,

a pressing member acting upon a drag mechanism in response to movement of the drag adjustment control member, and

an anti-slack mechanism for the drag mechanism mounted between the drag adjustment control member and the pressing member to allow the drag adjustment control member to be operated with an operational force exceeding a predetermined value and to fix the drag adjustment control member to an adjusted position,

wherein said anti-slack mechanism includes an engaging element having an elastic engaging projection and a plurality of engaging recesses for engaging the elastic engaging projection,

said engaging element including at a center position thereof a fold-back portion acting as said engaging projection to be inserted into a first recess peripherally defined in a boss portion projecting from the drag adjustment control member, said first recess including corners, and said engaging element further including an opposed pair of flared end legs supported respectively on contact surfaces in second recesses peripherally defined in said boss portion whereby said engaging element is removably attached to the drag adjustment control member,

said engaging element and engaging recesses creating the predetermined operational force for operating the drag adjustment control member, said flared end legs including contact surfaces, said engaging projecting being located between said end legs,

said plurality of engaging recesses being defined in the pressing member, and

wherein said engaging element is made of resiliently deformable sheet metal, said engaging element being substantially V-shaped, said contact surfaces of said flared end legs being in contact with said contact surfaces of said second recesses, and wherein said legs of said engaging element are in contact with said corners of said first recesses.

5,192,037

DOUBLE-PIVOTING DEPLOYMENT SYSTEM FOR AEROSURFACES

William J. Moorefield, St. Peters, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Aug. 23, 1991, Ser. No. 749,316

Int. Cl.[5] F42B *10/14*; B64C *3/56*

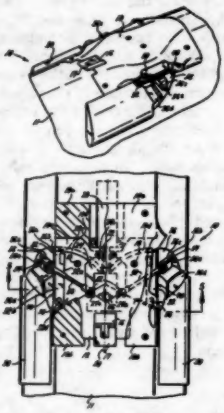
U.S. Cl. 244—46 **8 Claims**

1. In combination with a support structure of an aerospace vehicle, an aerosurface deployment assembly, comprising:

(a) an actuating means;

(b) a plurality of aerosurfaces, each having an inner segment and an outer segment, wherein each said inner segment is pivotally connected to said support structure at an axis of rotation substantially perpendicular to the longitudinal axis of the aerospace vehicle, and wherein an outer side portion of each said inner segment is pivotally connected to an inner side portion of each said outer segment at an axis of rotation parallel to said longitudinal axis when said aerosurfaces are in the stowed position;

(c) a yoke means, operably connected to said actuating means, for translational travel along said support structure; and



(d) a plurality of linkage rods for interconnecting said yoke means and said aerosurfaces, wherein a single linkage rod interconnects said yoke means to each said aerosurface, and

wherein translational travel of said yoke means, initiated by said actuating means, moves said plurality of linkage rods to rotate said aerosurfaces about each of said axes of rotation substantially perpendicular to said longitudinal axis and each of said axes of rotation parallel to said longitudinal axis thereby deploying said aerosurfaces.

5,192,038

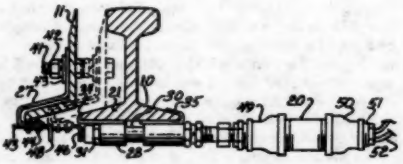
SAFETY DETECTOR FOR RAILROAD SWITCH POINTS WITH VISUAL INDICATOR MECHANISM

Salvador C. Ocampo, 4715 W. Wrightwood Ave., Chicago, Ill. 60639

Continuation-in-part of Ser. No. 776,725, Mar. 19, 1992, Pat. No. 5,116,006, which is a continuation of Ser. No. 405,656, Sep. 11, 1989, abandoned. This application May 26, 1992, Ser. No. 889,061

Int. Cl.[5] B61L *5/10*

U.S. Cl. 246—220 **27 Claims**



1. A safety detector for a railroad switch point where a switch rail is intended to contact a stock rail in a given plane, said safety detector comprising

a detector mechanism secured to said stock rail at said point,

said detector mechanism having a spring loaded plunger assembly normally biased in the direction of said switch rail reciprocally secured in alignment with said switch rail at said point and electrical contact means connected to said plunger assembly for reporting contact or the lack of contact between said switch rail and said stock rail, and

adjustable means mounted on said switch rail at said point adapted to contact and reciprocate said plunger against said electrical reporting means when said switchrail is in physical contact with said stockrail at said point,

said detector mechanism having a housing located beneath said rail for containing said electrical contact means and plunger assembly,

said housing comprising a closed body secured to said stockrail,

said plunger assembly having a contact tip extending from said housing adjacent said switchrail and an end remote therefrom in contact with said electrical contact means and a rigid connection extending between and affixed to said contact end and said remote end,

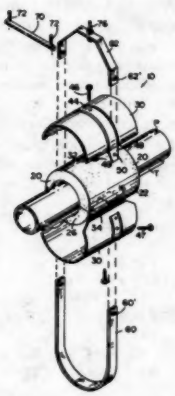
said electrical contact means comprising electrical contact members secured in said housing and means on said remote end for contacting said electrical contact members when said plunger is reciprocated.

5,192,039

HANGER INSULATION SYSTEM

Robert O. Williams, Gladwin, Mich., assignor to Ticon, Inc., Midland, Mich.

Filed Oct. 7, 1991, Ser. No. 772,269
Int. Cl.[5] F16L *3/00*
U.S. Cl. 248—62 **5 Claims**



1. A unitary, clamshell, pipe insulation and shield assembly comprising:

upper and lower, generally semicylindrical, insulation elements which together form a cylindrical subassembly having a rigid portion to support a pipe;

said elements each having a partial cylindrical passage therethrough to collectively form a generally cylindrical passage for a pipe to extend through;

a water repellant jacket around said elements having a pair of adjacent ends at a peripheral location around said jacket, and having a flexible hinge portion intermediate said ends for enabling said jacket ends to be spaced apart or together;

said jacket ends having extensions which overlap each other when said assembly is closed;

semicylindrical channel ring clamp elements having interconnectable ends for securing said clamp elements together around said jacket;

said channel ring elements having pairs of radially outwardly extending curved flanges to define a curved channel therebetween for receiving and retaining a U-clamp; and

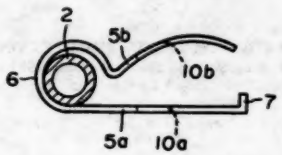
said clamp elements, said jacket and said insulation elements being fastened together to form a hinged clamshell arrangement capable of being placed around a pipe and then closed and connected.

5,192,040

PIPING/WIRING CLAMPING DEVICE

Katsushi Washizu, Numazu, Japan, assignor to Usui Kokusai Sangyo Kaisha Ltd., Japan

Filed Dec. 20, 1991, Ser. No. 811,802
Claims priority, application Japan, Dec. 12, 1990, 2-413296
Int. Cl.[5] F16L *3/08*
U.S. Cl. 248—74.5 **6 Claims**



1. A piping/wiring clamping device formed from an elongated band of resiliently flexible material having opposed first and second ends, a substantially planar engaging ear disposed at the first end of the band, an elongated first mounting wall extending substantially orthogonally from the engaging ear, the first mounting wall having a first mounting hole spaced a selected distance from the engaging ear, a clamping wall extending from the first mounting wall and curled back toward the first mounting wall, an elongate second mounting wall of a selected length extending from the clamping wall to the second end of the band, portions of the band intermediate the length of the second mounting wall being arched away from the first mounting wall, the second mounting wall being provided with a second mounting hole extending therethrough at a distance from the second end substantially equal to the distance between the engaging ear and the first mounting hole, the lengths of the clamping wall and the second mounting wall being selected such that the clamping wall securely clamps a piping-/wiring member engaged therein when the second end of the band is engaged by the engaging ear and when the second mounting wall is urged from the arched configuration and into face to face contact with the first mounting wall.

5,192,041

BABY BOTTLE HOLDER

Sheree M. Bryant, 1804 E. Oliver St., Baltimore, Md. 21213

Filed Jun. 17, 1991, Ser. No. 716,562
Int. Cl.[5] A47D *15/00*
U.S. Cl. 248—104 **3 Claims**

2. A device for supporting an infant's feeding bottle selected from a plurality of feeding bottles having a range of different diameters, while feeding an infant in a seat placed on a surface, comprising:

a bottle holder including a flexible member for wrapping around said feeding bottle, said flexible member including means for securing said feeding bottle to said bottle holder;

a first flexible rod having a first end attached to said bottle holder, and having a second end;

a second flexible rod having a first end attached to said first flexible rod, and having a second end;

means attached to the second end of said second flexible rod for attaching to said seat; and

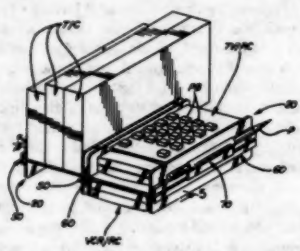
stand means attached to said second end of said first flexible rod for stabilizing said device on said surface.

5,192,042

HOLDER FOR VCR AND TV REMOTE CONTROLS

Randall C. Wotring, 9824 Blackburn, Livonia, Mich. 48150, and Richard N. Clark, 25360 Lynford Dr., Farmington Hills, Mich. 48018

Filed Nov. 1, 1989, Ser. No. 429,969
Int. Cl.[5] A47F 7/00
U.S. Cl. 248—176 23 Claims



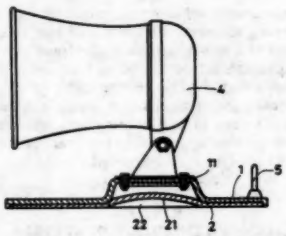
1. A one-piece, lightweight, hand-holdable holder for VCR and TV keyboard remote control units and other articles of like dimension, said holder being injection molded or extruded in one piece from plastic material to form two planar, parallel side walls spaced apart and integrally interconnected by a central web, said side walls and central web being generally co-extensive in length and having an overall length dimension at least about twice the spacing between said side walls, said holder having a generally "H" configuration in cross-section transverse to the longitudinal axis of said holder, said central web having first and second flat surfaces on opposite sides thereof, said side walls having portions flanking said web surfaces and protruding respectively therefrom to define with the associated web surfaces first and second remote control receiving spaces apart for removable affixation therein of associated first and second removable remote control units by separate adhesive strips attached to an underside of each remote control unit and to the opposite surfaces of said center web to thereby removably mount said remote control units keyface-outwardly and in back-to-back inverted relationship relative to one another on said holder, said side walls and central web having free edges at opposite longitudinal ends thereof formed to provide open, unobstructed end opening spaces to permit the remote control units to project beyond the opposite longitudinal ends of said holder when mounted in said first and second holder spaces, said side walls protruding from said central web to free longitudinal edges of said side walls defining first and second side wall height dimensions a distance sufficient to enable nesting of the remote control units respectively in the associated one of said first and second holder spaces such that said holder supports either remote control unit when inverted with said holder with the remote control unit keyboard spaced clear of a flat supporting surface on which the holder is placed.

5,192,043

MAGNETIC RUBBER SUCTION DISC

Yen C. Fa, 5F, No. 10, Lane 560, Chung Cheng Rd., Hsinten, Taipei Hsien, Taiwan

Filed Dec. 11, 1991, Ser. No. 805,056
Int. Cl.[5] A47G 29/00
U.S. Cl. 248—206.2 1 Claim



1. A magnetic rubber suction disc assembly for releasably securing an alarming device to a metal surface by both suction and magnetic attraction, comprising:

a suction disc member formed of a magnetic rubber composition, said suction disc member having a peripheral portion and a centrally disposed first raised portion, said first raised portion defining a vacuum formation zone; and

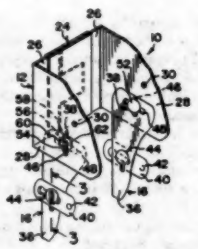
a seat member coupled to said peripheral portion of said suction disc member, said seat member having a centrally disposed second raised portion for coupling to said alarming device, said second raised portion being located in overlying relation with respect to said first portion, said first and second raised portions being spaced each from the other in detached relation therewith, whereby said second raised portion of said seat member substantially isolates said first raised portion from vibration of said alarming device.

5,192,044

EXTRA ROLL CADDY FOR TOILET PAPER AND THE LIKE

Arnold B. Baskin, 6836 108th St., Apt. A-46, Forest Hills, N.Y. 11375-3366

Filed Dec. 13, 1991, Ser. No. 808,166
Int. Cl.[5] A47F 5/00
U.S. Cl. 248—309.1 4 Claims



1. An extra roll caddy for toilet paper and the like which comprises:

a) an adjustable auxiliary holder for dispensing an auxiliary

roll of toilet paper therefrom, wherein said adjustable auxiliary holder includes:

i) a telescopic back section having two interconnecting slide friction segments, so as to adjust to various sized existing fixed toilet paper holders;

ii) a pair of side sections, each extending at a right angle from one of said slide friction segments with each said side section having a hole for supporting an auxiliary roller for the auxiliary roll of toilet paper; and

iii) means for mounting said back section to a flat vertical wall; and

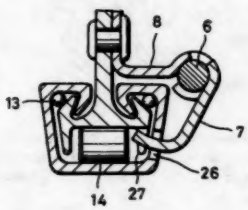
b) means for adjustable mounting said adjustable auxiliary holder to a roller in an existing fixed toilet paper holder on the flat vertical wall, so that in one instance said adjustable auxiliary holder can be positioned above the existing fixed toilet paper holder and in another instance said adjustable auxiliary holder can be positioned below the existing fixed toilet paper holder.

5,192,045

SEAT SLIDE ADJUSTER FOR VEHICLES

Yukifumi Yamada, and Kenichiro Akizuki, both of Toyota, Japan, assignors to Aisin Seiki Kabushiki Kaisha and Toyota Jidosha Kabushiki Kaisha, Japan

Filed Jan. 17, 1992, Ser. No. 822,046
Claims priority, application Japan, Jan. 21, 1990, 2-19190
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—430 **8 Claims**



1. A seat slide adjuster for a vehicle comprising:

a lower rail fixable to a vehicle body;

said lower rail including a horizontal base portion, and upwardly extending side portions from both ends of said horizontal base portion defining corner portions;

upper portions extending horizontally inwardly from both ends of said side portions to define an opening, and oblique portions extending outwardly from both ends of said upper portions;

an upper rail slidable with respect to said lower rail and having a bracket with a seat belt anchorage;

said upper rail including a vertical base portion projecting through said opening of said lower rail, a lower portion extending horizontally from a lower end of said vertical base portion and being parallel with said base portion of said lower rail, and oblique portions extending inwardly and upwardly from said lower portion; and

balls positioned in spaces defined by the corner portions of said lower rails and the oblique portions of said upper rail.

5,192,046

PROCESSOR SUPPORT

Paul L. Howard, Belmont, Calif., assignor to Steelcase Inc., Grand Rapids, Mich.

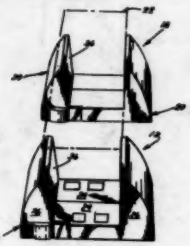
Filed May 29, 1991, Ser. No. 706,656
Int. Cl.[5] F16M *1/00*
U.S. Cl. 248—676 **18 Claims**

1. A device for use in supporting computer equipment in a vertical position, said device comprising:

a support member defining a horizontally extending foot portion and a vertically extending end portion;

an elongated rack joined to said foot portion; and

a pawl member including a base hinged to said support member and an elongated leg joined to said base, said leg defining a tooth portion and said base including an actuator, and wherein said foot portion includes an upper support surface, an outer wall and an inner wall defining an opening at an end of said foot portion, said rack being formed as part of said inner wall.

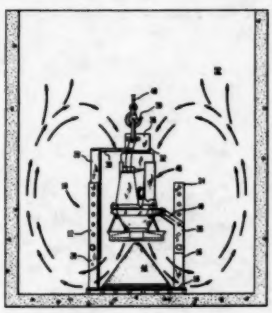


5,192,047

TETHERABLE FRAME FOR, AND IN COMBINATION WITH, A SUBMERSIBLE MIXER

Dominic A. Lisi, Trumbull, and Robert L. Dellus, Newtown, both of Conn., assignors to ITT Corporation, New York, N.Y.

Filed Jan. 28, 1992, Ser. No. 827,174
Int. Cl.[5] F16M *3/00*
U.S. Cl. 248—676 **19 Claims**



1. A tetherable frame for a submersible mixer, comprising:

elongate limb means for mounting a submersible mixer thereto, said limb means comprises a plurality of spaced-apart, parallel limbs, each thereof being joined, at one end, to said base; wherein a pair of said limb means have, at one end thereof, tether-attaching means and, at the opposite end thereof, a base, and means, intermediate said base and said attaching means, means for removably fastening a submersible mixer thereto.

5,192,048

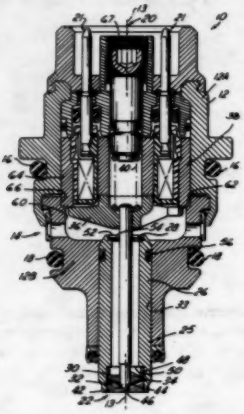
FUEL INJECTOR BEARING CARTRIDGE

Russell J. Wakeman, Newport News, Va., assignor to Siemens Automotive L.P., Auburn Hills, Mich.

Filed Jun. 26, 1992, Ser. No. 905,580
Int. Cl.[5] F16K *31/02*
U.S. Cl. 251—129.16 **10 Claims**

1. An electrically operated valve comprising a valve body, an electro-mechanical actuator that acts through a needle for setting the extent to which the valve is opened, spaced apart

bearings on said body acting at axially spaced apart locations on said needle for guiding motion that is imparted to said



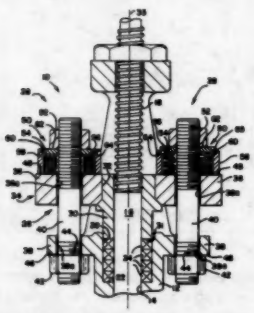
needle by said actuator, characterized in that said bearings are disposed in a tube that is disposed in a bore in said valve body.

5,192,049

DUAL RATED LIVE LOADED PACKING SYSTEM FOR A VALVE STEM

William A. Ridge, Inman, Kans., assignor to Cashco, Inc., Ellsworth, Kans.

Filed Jun. 12, 1992, Ser. No. 897,864
Int. Cl.[5] F16K *41/02*; B65D *53/00*
U.S. Cl. 251—214 **23 Claims**



1. A dual rated, live loaded packing system for a valve of the type including a stem extending into a packing chamber having an annular shoulder at one end around said stem and an open end for receiving a packing gland for exerting thrust toward said shoulder against a packing ring mounted in said chamber, said valve including a fixed ear extending radially of said stem and said gland including a movable ear confronting and movable toward and away from said fixed ear, the improvement comprising:

at least one loading assembly extending between said ears for exerting a live load on said packing ring through said packing gland;

said loading assembly comprising an elongated tension member having a first end secured to a first of said ears and a second end for resilient biasing engagement with a second of said ears;

said second end including adjustable nut means threadedly engaged on said tension member with a thrust face spaced from a thrust face on said second ear, resilient spring means mounted on said tension member between said thrust faces for biasing the same away from each other and spacer means mounted on said tension member between said thrust faces for setting up a minimum spacing between said thrust faces; and

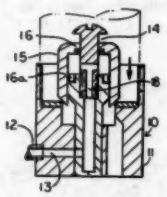
washer means mounted on said tension member between said nut means and said spacer means having opposed first and second stop surfaces for selectively engaging a surface on said spacer means to provide different biasing values between said ears dependent on which of said first and second stop surfaces is facing said thrust face on said second ear.

5,192,050

FOOT OPERATED WATER VALVE APPARATUS

Peter C. Mele, P.O. Box 1596, Burlington, Vt. 05402

Filed May 7, 1992, Ser. No. 879,564
Int. Cl.[5] F16K *31/122*, *31/62*
U.S. Cl. 251—295 **2 Claims**



1. A foot operated water valve apparatus, for use in situations that require or would benefit from the user controlling the flow of water without the use of one's hands, comprising:

a valve housing;

said valve housing having threading means for attaching said housing to a water line fitting;

said valve housing comprising a circular body;

said valve housing having sealing means positioned at the junction of said valve housing and said water line fitting;

centerline rod means;

said centerline rod means comprising a fixed rod;

said centerline rod means having a hollow lower portion;

moving piston means surrounding said centerline rod means;

said moving piston means having an open base portion;

said moving piston comprising a circular shell;

internal aperture means for permitting flow of fluid when said moving piston means is in the open position;

said internal aperture means comprising main line aperture means for directing fluid to the main outlet;

a pressure control line;

pressure control line aperture means;

said pressure control line aperture means having at least one sealing means positioned within said moving piston means;

said sealing means comprising u-shaped seals;

said u-shaped seal comprising a seal to permit sufficient leakage to allow for the pressurization when said moving piston means is in the closed position;

foot valve means;

means for connecting said foot valve to said pressure control line aperture means;

said foot valve means having bladder means for providing a fluid reservoir in order to allow a foot induced pressure positive differential;

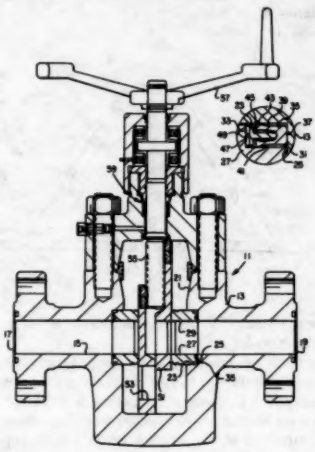
said foot valve means further having bleed means for allowing said pressure control line to charge with fluid only.

5,192,051

UNIDIRECTIONAL SEAT SEAL FOR GATE VALVE

Willie Roberson, Spring, Tex., assignor to ABB Vetco Gray Inc., Houston, Tex.

Filed Jul. 30, 1992, Ser. No. 922,710
Int. Cl.[5] F16K 3/00
U.S. Cl. 251—328 9 Claims



1. In a gate valve having a body containing a chamber, a flow passage having an axis and extending transversely through and intersecting the chamber, a counterbore formed in the flow passage at each intersection with the chamber, a cylindrical seat ring located in each counterbore, a gate, and actuator means for moving the gate through the chamber between the seat rings between open and closed positions, an improved seal assembly located between each counterbore and each seat ring, comprising in combination:

each of the counterbores having a cylindrical counterbore wall terminating at an outer end with an inward facing shoulder, the inward facing shoulder being perpendicular to the counterbore wall;

a reduced diameter cylindrical surface formed on an outer end of each of the seat rings, defining an outward facing shoulder axially spaced from and opposing the inward facing shoulder, the outward facing shoulder, inward facing shoulder, reduced diameter cylindrical surface and counterbore wall defining an annular cavity;

an annular seal located in each of the cavities, the seal having a base on an outer end and two legs extending inward therefrom and separated by an annular recess, the base being positioned adjacent the inward facing shoulder, one of the legs being positioned to seal against the counterbore wall and the other of the legs being positioned to seal against the cylindrical surface when the gate is closed and outward directed pressure is applied to the seal;

a standoff ring located in each of the cavities, the standoff ring having an outer end extending into the recess of the seal into contact with the base and an inner end protruding axially from the recess for contact with the outward facing shoulder if inward directed test pressure is applied when the gate is closed, the seal having an inner diameter and an outer diameter; and

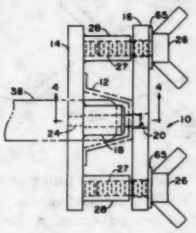
the standoff ring having a flowby passage communicating the inner diameter of the seal to the outer diameter of the seal, to allow flowby past the seal when the inward directed test pressure is applied when the gate is closed.

5,192,052

POST EXTRACTING FIXTURE

Eugene V. Abarotin, 3538 McWilliams Rd., Murrysville, Pa. 15668

Filed Mar. 19, 1992, Ser. No. 853,999
Int. Cl.[5] E21B 19/00
U.S. Cl. 254—30 4 Claims



1. A device for removing a post from the ground, comprising:

a bracket for engaging opposed faces of the post, said bracket comprising a first rigid plate member having spaced apart internally threaded spacers capable of straddling the post when the plate member is placed thereagainst,

a second rigid plate member having openings that straddle the post when the two plate members are aligned and disposed together in generally parallel planes on the post,

threaded fasteners sized to be received by the openings in the second plate member and the internally threaded spacers of the first plate member,

said fasteners and internally threaded spacers being effective to tightly secure the plate members on the post, the length of the spacers being somewhat less than the thickness of the post such that the two plate members tightly grip the post when the fasterners are suitably threaded into the spacers, and

the plate member provided with said spacers having a center member sized to enter and seat in a recess of the post,

said bracket being effective to extract the post from the ground when an upwardly directed force is applied to at least one of the plate members.

5,192,053

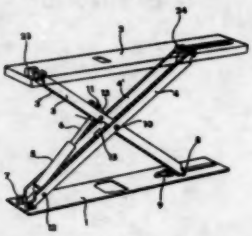
DEVICE FOR INITIATING A LIFTING MOVEMENT IN A LIFTING DEVICE

Per-Olof Sehlstedt, Berge, S-870 10 Alandsbro, Sweden

PCT No. PCT/SE89/00584, § 371 Date May 7, 1991, § 102(e) Date May 7, 1991, PCT Pub. No. WO90/04565, PCT Pub. Date May 3, 1990
PCT Filed Oct. 24, 1989, Ser. No. 681,539
Claims priority, application Sweden, Oct. 25, 1988, 8803815
Int. Cl.[5] B66F 3/22
U.S. Cl. 254—122 6 Claims

1. A device for initiating a lifting movement in a lifting mechanism comprising at least a first lifting arm and a second lifting arm interconnected by a first joint, the lifting mechanism also including a force applying means for acting on one of said first and second lifting arms, said force applying means and said first and second lifting arms in an initial position being oriented generally parallel with respect to each other before the initiation of the lifting movement, wherein a force from said force applying means is transmitted to said first lifting arm by a double-armed lever connected to said first lifting arm by a second joint, said force applying means acting on a first lever arm of said double-armed lever via a third joint in such a way that the force from said force applying means is transmitted eccentrically relative to said second joint, a second lever arm of said double-armed lever acting against a lever support pro-

vided on said second lifting arm between said first joint and said second joint, a first abutment on said double-armed lever engaging a second abutment provided on said first lifting arm after a limited movement of said double-armed lever, corresponding to the initiation of the lifting movement, such that said double-armed lever is blocked against said first lifting arm and in continued lifting movement is disengaged from said second lifting arm such that the force from said force applying means is transmitted entirely to said first lifting arm.

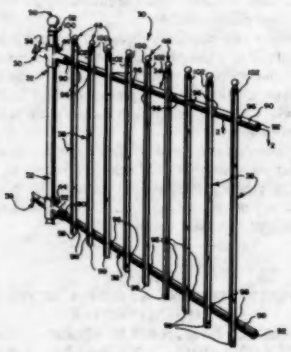


5,192,054

PREFABRICATED SIMULATED WROUGHT IRON AND LIKE FENCING SYSTEMS AND METHODS

Ivan Sharp, 5413 N. 3100 West, Amalga, Utah 84335

Filed Jan. 24, 1991, Ser. No. 645,164
Int. Cl.[5] E04H *17/16*
U.S. Cl. 256—24 **21 Claims**



1. Fencing apparatus comprising:

a section of fence comprising at least two spaced horizontal members comprised of steel, each horizontal member comprising opposed exposed ends;

a plurality of vertical bars comprised of steel spanning between and above and below the horizontal members;

means attaching each vertical bar to each horizontal member;

a floor or ground-engaging, vertically-extending post disposed at each end of the fence section the posts being spaced one from the other the distance substantially the same as the length of horizontal members;

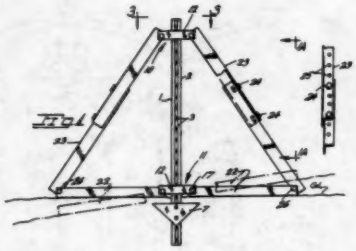
a two part clamshell connector spanning between each post and each adjacent end of each horizontal member, each connector means defining a two part first collar contiguously surrounding the associated post and a two part second collar contiguously surrounding an end of the associated horizontal steel member whereby weight of the section of fence is transferred directly across the connector means to the posts the two part connector being held in position by at least one releasably fastener passing centrally through both connector parts.

5,192,055

POST BRACE ASSEMBLY

Billy A. Griggs, 43495 SE. George Rd., and Kenneth B. Weaver, 40585 SE. George Rd., both of Estacada, Oreg. 97023

Filed Apr. 2, 1992, Ser. No. 862,431
Int. Cl.[5] B21F *27/00*
U.S. Cl. 256—35 **8 Claims**



1. A brace assembly for attachment to a fence post, said assembly comprising,

an upper bracket assembly and a lower bracket assembly for clamped attachment to said post in a spaced apart manner,

elongate ground engageable members attached at one of their ends to said lower bracket assembly, elongate braces each attached at one of their ends to said upper bracket assembly, and

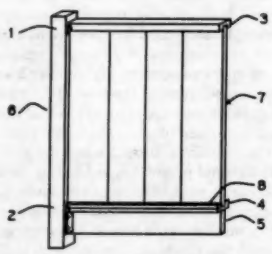
coupling means attaching the remaining end of each of said braces to one each of said ground engaging members, and wherein said upper bracket assembly and said lower bracket assembly each comprise a main clamping plate, angular clamping members, fastener means engageable with said main clamping plate and said angular clamping members, additional fastener means engageable solely with said angular clamping members.

5,192,056

FENCE CONSTRUCTION SYSTEM

Belarmino G. Espinueva, 2710 Glen Evans Ct., San Jose, Calif. 95148

Filed Oct. 25, 1991, Ser. No. 782,826
Int. Cl.[5] E04H *17/14*
U.S. Cl. 256—65 **6 Claims**



1. A fence construction system comprising:

an upper bracket having a U-shaped channel for receiving the upper rail of a fence and having one or more flanges for attachment of said upper bracket to a fence post,

and a T-shaped lower bracket with the lower portion of the T-shape comprising a U-shaped channel for receiving the kickboard of a fence, and the upper portion of the T-shape

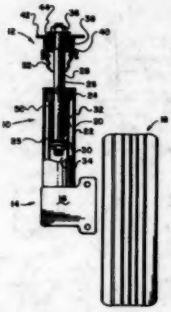
comprising a shallow U-shaped channel for receiving the lower rail of a fence and having one or more flanges for attachment of said lower bracket to a fence post.

5,192,057

ELASTOMER REBOUND, JOUNCE AND RELATED COMPRESSION SPRINGS

Neal E. Wydra, Glen Ellyn, and David W. Geick, North Aurora, both of Ill., assignors to Miner Enterprises, Inc., Geneva, Ill.

Filed Aug. 12, 1991, Ser. No. 743,650
Int. Cl.[5] F16F *1/52, 13/00*
U.S. Cl. 267—153 13 Claims



1. In an vehicle strut assembly having a housing, a piston and piston rod extending through said housing and interconnecting the vehicle body to the wheel assembly for damping the vehicle spring system, an improved rebound bumper compression spring comprising:

a) an elongated member formed of an elastomer having a ratio of plastic strain to elastic strain that is greater than 1.5 to 1, said member being mounted in said strut assembly so as to attenuate noise, vibration and road shocks;

b) said member having wall sections and connecting angles to define a bellows shape;

c) the molecular structure of the walls and angles of said member being oriented as a result of plastic deformation of said member in at least one direction;

d) the dimensions of said member being such that the ratio of the combined height of two adjoining wall sections to the thickness of the wall is less than 17;

e) the thickness of said walls increasing over a substantial portion of the length of the elongated member in order to provide a variable spring rate; and

f) said member having a length so as to cushion said spring system upon rebound for a distance of greater than 3 millimeters and to provide for an initial soft spring rate for a portion of its travel and a higher spring rate for the remainder of its travel.

5,192,058

SWING CLAMP

John H. VanDalsem, and Roger L. Craft, both of Emporia, Kans., assignors to Vektek, Inc., Emporia, Kans.

Filed Jan. 2, 1992, Ser. No. 816,861
Int. Cl.[5] B23Q *3/08*
U.S. Cl. 269—24 4 Claims

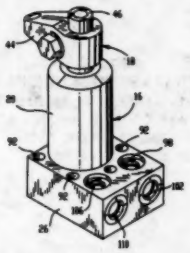
1. A swing clamp apparatus adapted to be mounted adjacent a work surface and operable to clamp a work article against the work surface in order for work to be carried out on the article, the apparatus comprising:

a housing including a bore defining a longitudinal axis, a mounting flange extending outward from the housing in a direction perpendicular to the longitudinal axis, and means for permitting the apparatus to be mounted relative to the work surface in any one of the plurality of different positions;

a piston received within the bore and being movable in the direction of the longitudinal axis, the piston being in sealing engagement with the housing to divide the bore into first and second bore regions;

a clamping arm supported on the piston for movement therewith between a clamping position in which the arm moves towards the work surface to permit clamping of work article against the work surface and a releasing position in which the arm moves away from the work surface to release the work article;

a first passageway for delivering pressurizing fluid from a source of pressurized fluid to the first bore section of the



housing to move the piston in a first direction between the clamping and releasing positions;

shifting means for shifting the piston in a second direction opposite the first direction between the clamping and releasing position;

the passageway including a first plurality of external ports formed in the flange and a first manifold with which the first plurality of ports communicate to permit pressurizing fluid to be delivered to the first passageway; and

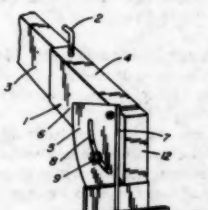
plugging means for plugging any of the plurality of ports not used during delivery of pressurizing fluid to the passage, wherein the flange includes a plurality of contiguous surfaces, each of the first external ports being formed in a different one of the contiguous surfaces.

5,192,059

FASCIA BOARD HOLDER

Earl Silver, RR4, Napanee, Ontario, Canada K7R 3K9

Filed Apr. 27, 1992, Ser. No. 873,780
Int. Cl.[5] B25B *5/14*
U.S. Cl. 269—41 5 Claims



1. A fascia board holder for removable attachment adjacent one end of a roof rafter, said holder comprising:

(a) a first channel section adapted to receive said roof rafter;

(b) means to releasably secure said channel section to said rafter;

(c) a planar quadrant element pivotally mounted on said channel section for rotation about a horizontal axis when

said channel section is operatively mounted on said roof rafter;

(d) means to releasably secure said planar-element in a selected angular position relative to said channel section; and

(e) a second channel section rigidly mounted on planar element in a plane perpendicular thereto, adapted to slidably receive and retain therein a fascia board in perpendicular abutting relation to said rafter.

5,192,060

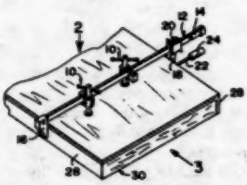
AUXILIARY PRESSURE CLAMP

John Novak, 1808 Craig Cir., Rogers, Ark. 72756

Filed Apr. 20, 1992, Ser. No. 872,686

Int. Cl.[5] B25B *1/00*

U.S. Cl. 269—147 **2 Claims**



1. An auxiliary pressure clamp for a bar clamp which has an elongated bar, a fixed jaw, a sliding head with a multiple pad clutch and an operating screw with a handle at one end and a movable jaw at another end, so as to engage the sides of a work piece, said auxiliary pressure clamp comprises:

a) an internally threaded sleeve;

b) means on said sleeve for adjustably engaging the elongated bar of the bar clamp at a right angle thereto, wherein said adjustable engaging means includes an L-shaped member affixed to one side of said sleeve, so as to form a slot therebetween, in which the elongated bar of the bar clamp can slideably fit within the slot, wherein said L-shaped member includes:

I) a short arm that is affixed to the one side of said sleeve; and

II) a long arm bent upwardly at a right angle to said short arm and extending parallel to said sleeve, further including:

i) said long arm having a threaded hole running longitudinally within its distal end;

ii) a washer having a diameter larger than the thickness of said long arm; and

iii) a securement screw threaded into said threaded hole in said long arm to retain said washer thereto, so as to keep the elongated bar within the slot between said sleeve and said L-shaped member and prevent accidental removal therefrom;

c) a force-applying screw which is threaded into said sleeve;

d) a head at one end of said force-applying screw; and

e) an operating handle at other end of said force-applying screw to rotate said force-applying screw within said sleeve, so that said head will engage with the work piece at a right angle to the clamping action of the bar clamp to apply pressure thereto, especially when various parts of the work piece are being glued together.

5,192,061

CLAMP ELEMENT, INCLUDING A RAPID FEED DEVICE COMBINED WITH A FORCE AMPLIFIER

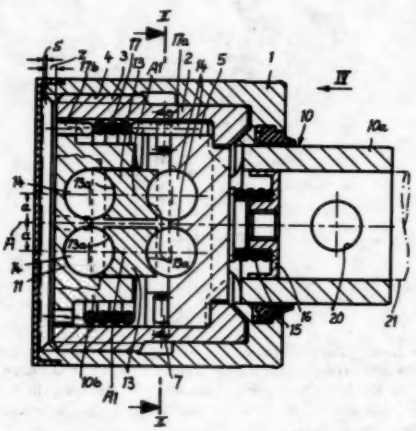
Thomas Schäublin, Münchwilen, and Heinrich Berchtold, Nänikon/Uster, both of Switzerland, assignors to Gressel AG, Andorf, Switzerland

Filed Apr. 8, 1992, Ser. No. 865,064

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1991, 4112512

Int. Cl.[5] B25B *1/14*

U.S. Cl. 269—228 **11 Claims**



1. A clamp element, including a rapid feed device combined with a force amplifier, having a rotatable feed sleeve surrounding the force amplifier and having an external thread engaging in a female thread of a housing surrounding the feed sleeve, the rotational movement of the sleeve relative to the housing being restricted by stop surfaces, a first tightening member fixedly arranged in the feed sleeve, a second tightening member arranged for limited rotation in the feed sleeve, a plurality of tightening pins arranged between the tightening members, which pins are inclined at an acute angle to a plane running through the feed sleeve axis in a relaxed position of the second tightening member and are arranged approximately parallel to this plane in the clamping position of the second tightening member, a compression spring biasing the two tightening members towards one another, and an actuating and tensioning rod extending through at least one aperture of the first tightening member and connected fast rotationally and in tension to the second tightening member, such that, on rotation of the actuating and tensioning rod in its tightening sense it is drawn axially into the housing in a feed stroke and a following tightening stroke, firstly by rotation of the feed sleeve relative to the housing and then by rotation of the second tightening member relative to the first tightening member, with consequent moving of the tightening pins into the clamping position parallel to the plane, wherein the tightening pins are supported on the second tightening member at the smallest possible distance from the feed sleeve axis, and wherein the actuating and tensioning rod is hollow and is passed through two diametrically opposite axial apertures provided between the first tightening member and the feed sleeve, the apertures being sufficiently large in the peripheral direction of the feed sleeve to allow a limited rotation of the actuating and tensioning rod relative to the feed sleeve sufficient for the rotation of the second tightening member relative to the first tightening member.

5,192,062

CLAMPING FORCE ADJUSTING DEVICE FOR A CLAMP DEVICE

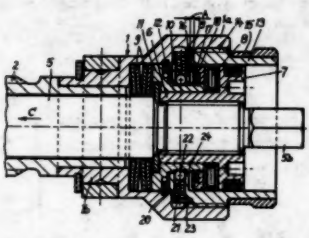
Heinrich Berchtold, Nänikon/Uster, Switzerland, assignor to Gressel AG, Aadorf, Switzerland

Filed Apr. 16, 1992, Ser. No. 869,628

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1991, 4112547

Int. Cl.[5] B25B 1/10

U.S. Cl. 269—244 11 Claims



1. A clamping force adjusting device for a clamp device having a hollow housing supported directly or indirectly on a movable clamp part, a tension rod passing through the housing and being rotatable and slidable relative thereto, a first end of the tension rod being coupled to a force amplifier and a second end carrying a tension sleeve provided with an abutment flange, the tension sleeve acting axially on the housing through an adjusting sleeve axially adjustable by means of a fine thread, a thrust bearing and a plurality of Belleville springs, wherein the abutment flange is provided on an end of the tension sleeve adjoining the second end of the tension rod and the thrust bearing is provided on a side of the abutment flange facing away from the second end of the tension rod, wherein the Belleville springs are supported directly in the housing, wherein an intermediate sleeve is provided between the Belleville springs and the thrust bearing, abutting the thrust bearing at one end and abutting the Belleville springs at an other end, and wherein the adjusting sleeve can screw into a fine thread of the housing and has a radially inwardly directed first stop member on an end facing the Belleville springs, the first stop member so cooperating with a radially outwardly directed second stop member on the intermediate sleeve and a spacer ring bearing on the thrust bearing that the axial spacing of the first stop member form the second stop member and from the spacer ring is adjustable in the unstressed state by screwing the adjusting sleeve relative to the housing, whereby the stroke of the intermediate sleeve which on tightening up to abutment of the first stop member on the second stop member and the spacer ring is adjustable.

5,192,063

CLAMP ARM

Jeffrey M. Peterson, Menomonee Falls; Ronald P. Evers, Cedarburg; Peter G. Rusch, Oconomowoc; Duane D. Dwyer, Milwaukee; Barry L. Macky, Grafton, and James D. Boldt, Wauwatosa, all of Wis., assignors to Applied Power Inc., Butler, Wis.

Filed Sep. 12, 1991, Ser. No. 758,028

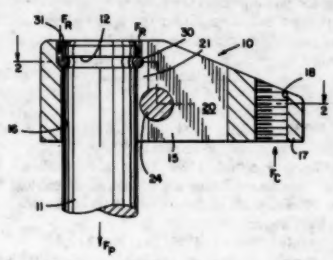
Int. Cl.[5] B25B 1/24

U.S. Cl. 269—257 9 Claims

1. A clamp arm adapted for attachment to a plunger forming a part of a clamp, comprising:

a body having a central opening for receiving the plunger and at least one working arm portion extending outwardly from the opening,

said body also including a slot extending radially from the central opening and a bore in the body that extends transversely through the slot, one portion of the bore being threaded to receive a headed bolt to draw the sides of the slot together to lock the body on the plunger, and



means mounted inside the body for axially restraining the body on the plunger including an element mounted for engagement with a circumferential groove on the outer perimeter of the plunger.

5,192,064

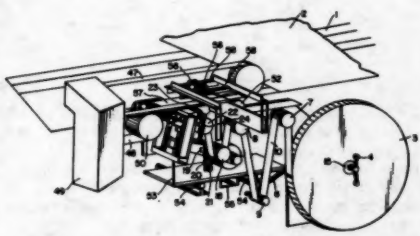
AUTOMATIC THIN WEB FEED AND CUT MECHANISM FOR FEEDING, CUTTING AND MATCHING THIN WEBS WITH PANEL EDGES

John Rusconi, Milpitas, Calif., assignor to Max Kahn Curtain Corporation, New York, N.Y.

Filed Dec. 16, 1991, Ser. No. 808,362

Int. Cl.[5] B65H 41/00, 39/02

U.S. Cl. 270—52.5 14 Claims



1. An apparatus for cutting and feeding web material from a roll stock and for merging a cut web material feed strip with a passing panel of material within a textile panel assembly host unit, said host unit having a drive system for moving said panel, said feeding being conducted in such a way as to dispose leading and trailing ends of the web feed strip even with leading and trailing edges respectively of the passing panel being processed, said apparatus comprising:

a roll of web material;

means for rotating said roll to allow for unwinding of web material therefrom;

means for cutting a strip of web material from said roll;

means for guiding web material from said roll to said means for cutting;

means for sensing a leading edge and a trailing edge of a passing panel moving within said host unit;

means for feeding a cut strip of web material and for merging the cut strip with said passing panel within said host unit, said means for feeding comprising a pair of opposing rollers having a nip therebetween for gripping web material from the means for guiding, and means for changing the relative position of the opposing rollers with respect to each other from a first position where the rollers can grip web material in said nip to a second position where the rollers cannot grip web material; and

means for controlling actuation of said means for cutting and

said means for feeding which is responsive to said means for sensing so that the means for cutting cuts web material into a strip having a leading end and a trailing end and the means for feeding feeds the strip and merges the strip with said passing panel such that the leading end and trailing end of said strip coincide with the leading edge and trailing edge, respectively, of said passing panel.

5,192,065

SORTER WITH TRAYS ROTATABLE INTO A STAPLING POSITION

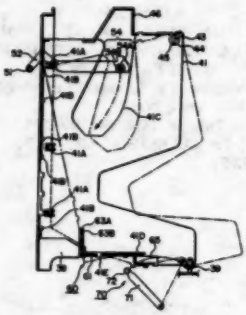
Kazuhiro Hirota, Hachioji; Hisao Hosoya, Sagamihara; Yasushi Yamada, Tachikawa; Kazunobu Miura, Hachioji, and Akihiko Nishiki, Hachioji, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Dec. 31, 1991, Ser. No. 815,416

Claims priority, application Japan, Jan. 16, 1991, 3-003379; Feb. 25, 1991, 3-030364; Mar. 15, 1991, 3-051302; Apr. 2, 1991, 3-069908

Int. Cl.[5] B42B 2/00; B65H 39/02

U.S. Cl. 270—53 13 Claims



1. A sheet sorting apparatus for sorting a plurality of sheets into a plurality of groups and stapling said sheets by the group, said apparatus comprising:

means for sorting said sheets into a plurality of groups;

means for supporting each of said groups of sheets;

means for positioning the sheets of each of said groups in a setting position on said supporting means;

means for pressing the sheets of each of said groups onto said supporting means to fix said sheets of each of said groups in the setting position on said supporting means;

moving means for oscillating said supporting means to a stapling position, said pressing means setting said sheets of each of said groups at said setting position on said supporting means during movement of said supporting means to said stapling position; and

means for stapling said sheets of each of said groups at said stapling position.

5,192,066

DEVICE FOR TRANSPORTING SHEETS IN OFFICE MACHINES

Helmut Steinhilber, Sonnenbergstrasse 40, CH-6052 Hergiswil, Switzerland

Filed Aug. 28, 1991, Ser. No. 751,132

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1990, 4033237

Int. Cl.[5] B65H 3/44, 5/02, 39/10

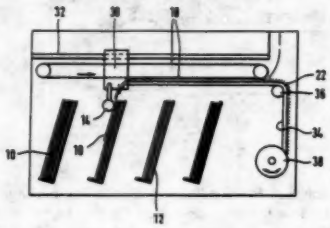
U.S. Cl. 271—9 9 Claims

1. A device for transporting individual sheets of a sheet-form recording medium in office machines comprising:

an endlessly circulating conveyor belt for positively engaging the sheets and comprising a carrier run,

a pressure device for holding the sheets in positive contact with the conveyor belt, the pressure device comprising at least one flat body parallel to the surface of the carrier run of the conveyor belt, said flat body being located at a fixed distance from said conveyor belt said body comprising thin, soft elastic mutually spaced pressure elements directed against said conveyor belt, the length of said pressure elements being greater than the distance between said flat body and said conveyor belt, and the mutual spacing of said elements being less than the linear dimensions of the sheets being transported,

a transport unit movable substantially parallel to said carrier run of said conveyor belt in front of magazines or storage compartments,



said flat body of said pressure device comprising at least a portion of a flexible belt having first and second ends, one said end of said flexible belt being attached to said transfer unit, a spring, said flexible belt having a second end attached to said spring for keeping said flexible belt under tension;

whereby said transfer unit may feed sheets out of a plurality of magazines or dispense sheets into a plurality of storage compartments disposed along said conveyor belt by movement of said transfer unit along said conveyor belt in from of said magazines or storage compartments.

5,192,067

PAPER FEED FOR PAGE PRINTER

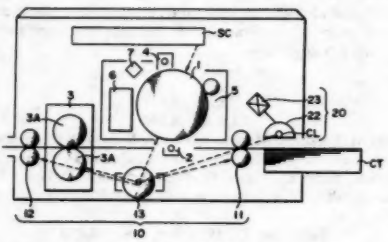
Akihiro Saito, Shizuoka, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 578,725, Sep. 6, 1990, abandoned. This application Mar. 10, 1992, Ser. No. 850,231

Claims priority, application Japan, Sep. 8, 1989, 1-234080

Int. Cl.[5] B65H 5/00; G03G 21/00

U.S. Cl. 271—10 7 Claims



1. A paper feeder comprising:

a paper pick up section for supplying paper;

an image carrier;

a feeding mechanism for receiving paper supplied from said pick up section and transporting the paper to an image transfer position for a toner image formed on said image carrier and rotated along with said image carrier;

a stepping motor for driving said image carrier and said feeding mechanism;

motor driving means for sequentially generating drive pulses to be supplied to said stepping motor; and

control means for controlling the operation of said paper pick up section in accordance with the number of the drive pulses generated from said motor driving means;

said control means including:

counting means for counting the drive pulses generated from the motor driving means;

detecting means for detecting that the count of said counting means has reached at least one preset value; and

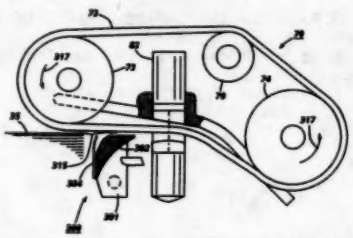
determining means for determining an actuating period of said pick up section in accordance with an output signal of said detecting means.

5,192,068

SHEET FEEDING AND SEPARATING APPARATUS WITH AN IMPROVED ENTRANCE GUIDE

Frank E. Parker, Fairport; Demosthenes K. Kiriazides, Penfield; Joseph S. Vetromile, Rochester, and Brian R. Ford, Walworth, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 28, 1992, Ser. No. 889,575
Int. Cl.[5] B65H *3/04*
U.S. Cl. 271—34 **5 Claims**



1. A sheet feeding and separating apparatus for feeding and separating sheets individually from a stack of sheets, comprising:

tray means for holding the stack of sheets, said tray means includes elevator means that lifts any sheet to be fed from said tray means to a feeding position above the confines of said tray means so that the sheets in the stack are initially unobstructed as they are fed from the stack;

endless feed belt means mounted in sheet feeding engagement with the top of the stack of sheets and applying a normal force thereto;

said feed belt means being rotatably mounted between spaced supports to provide a deformable unsupported section therebetween;

a retard roll having a curvilinear portion thereof deformably engaging said feed belt means to form a nip therebetween for separating any overlapped sheets reaching the nip; and

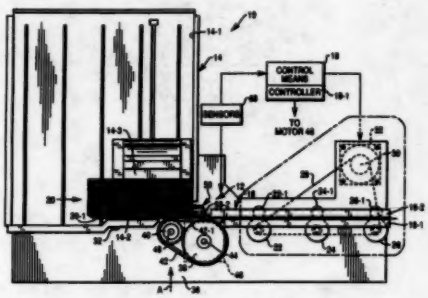
an integrally molded stationary multiple piece entrance guide positioned between said retard roll and said tray means such that said entrance guide is the first obstruction sheets being fed by said feed belt means encounter en route to the nip formed between said retard roll and said feed belt means, said entrance guide includes a high friction urethane first portion with a radiused edge that serves to shingle slugs of sheets and a polycarbonate second portion that supports said first portion, said polycarbonate second portion having an elongated third portion that is cantilevered, said elongated third portion includes an upper surface that terminates at a sharp edge and extends to a position immediately adjacent said curvilinear portion of said retard roll and works in conjunction with an upper surface of said high frictional urethane first portion to support sheets the entire distance from the stack into said curvilinear portion of said retard roll to prevent lightweight sheets from causing jams at the nip formed between said retard roll and said feed belt means, and a flexible deflector means for assisting in reducing the initial feed coefficient of friction and preventing down curled sheets from stubbing on said first portion of said entrance guide.

5,192,069

DOCUMENT FEEDER EMPLOYING A BELT

Kenneth S. Seymour, Conestogo, and Dennis T. Sonnenburg, Waterloo, both of Canada, assignors to NCR Corporation, Dayton, Ohio

Filed Mar. 5, 1992, Ser. No. 846,091
Int. Cl.[5] B65H *3/04*
U.S. Cl. 271—35 **6 Claims**



1. An apparatus for feeding documents comprising:

a hopper for storing a stack of documents to be fed in a substantially vertical plane, said hopper having an alignment side and a stop;

feed means for moving the documents in the hopper along said alignment side towards the stop;

a drive roller and an idler roller having an endless belt mounted thereon to provide a linear portion of the endless belt parallel to the first document to be picked from the stack, with said linear portion engaging the first document to be picked;

a retard mechanism positioned adjacent said alignment side and in opposed relationship with said linear portion of said endless belt;

said retard mechanism having a retard member including a first portion to engage the documents in the stack and also having a second portion substantially parallel to said linear portion to permit only one document to be moved towards a document track by aid linear portion of said endless belt; and

a resilient member to bias said second portion towards said lien ar portion of said endless belt;

said stop being aligned with said linear portion of said endless belt, and said idler roller being positioned between said stop and said retard mechanism.

5,192,070

SUCTION PAD

Shigekazu Nagai; Shuuzou Sakurai, and Tadasu Kawamoto, all of Ibaraki, Japan, assignors to SMC Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 6, 1991, Ser. No. 755,745
Claims priority, application Japan, Sep. 6, 1990, 2-093900[U]
Int. Cl.[5] B65H *3/08*
U.S. Cl. 271—90 **2 Claims**

1. A suction pad for attracting and holding a workpiece, comprising:

a suction base coupled via a connector to a vacuum suction source;

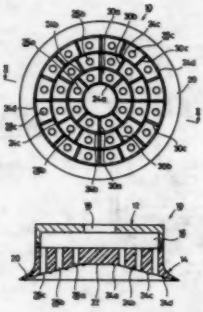
a suction skirt connected with said suction base, said suction

skirt including a separating wall disposed between said suction base and an inside of said suction skirt;

a first vacuum chamber defined inside said suction base above said separating wall, said separating wall separating said first vacuum chamber and the inside of said suction skirt;

a plurality of small diameter through holes defined in said separating wall for allowing said first vacuum chamber to communicate with the inside of said suction skirt;

a plurality of circular partition walls concentrically disposed on said separating wall facing the inside of said suction skirt and adjacent said through holes; and



a plurality of radial projections radially disposed on said separating wall, said projections being disposed between respective concentrically disposed partition walls and adjacent said through holes, wherein said partition walls and said projections jointly define a plurality of second vacuum chambers surrounding each of said through holes, and wherein when said suction pad is holding a workpiece said second vacuum chambers are defined between said separating wall and the workpiece held by said suction pad.

5,192,071

IMAGE-FORMING APPARATUS PROVIDED WITH AUTOMATIC ORIGINAL DELIVERY MECHANISM AND CARRIER SHEET FOR USE IN SAID APPARATUS

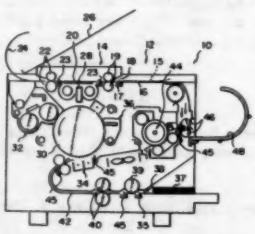
Kiyofumi Kodama, Hannan, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 437,689, Nov. 17, 1989, Pat. No. 5,114,139. This application Nov. 20, 1991, Ser. No. 795,030

Claims priority, application Japan, Nov. 18, 1988, 63-151354; Nov. 30, 1988, 63-300865

Int. Cl.[5] B65H *5/00*

U.S. Cl. 271—225 **3 Claims**



1. An image-forming apparatus provided with an automatic original delivery mechanism for automatically receiving and guiding an original set at an insertion opening to a copying position by automatic original delivery means and discharging the original to the outside of the apparatus after the coping operation, said apparatus comprising first original detecting means arranged at the initial setting position of the original, second original detecting means for detecting the absence or presence of the original from the original insertion opening to the original discharge opening, including the copying position, copying paper sheet delivery trouble detecting means arranged in a delivery path for a copying paper sheet to detect a delivery trouble of the copying paper sheet, and original delivery means capable of delivering the original from the original insertion opening to the discharge opening and performing the reverse delivery of the original, said original delivery means being controlled by said first original detecting means, second detecting means and said copying paper sheet delivery trouble detecting means so that in the state where said second original detecting means detects the original and the copying paper sheet delivery trouble detecting means detects a delivery trouble of the copying paper sheet, said original delivery means is actuated to perform the reverse delivery, and in the state where no trouble occurs in the copying paper sheet delivery path and said first original detecting means detects the original, said original delivery means is actuated to perform the normal delivery.

5,192,072

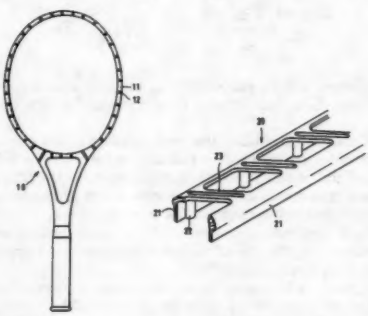
GAME RACKET HAVING IMPROVED STRINGING MEANS

Arthur Hong, No. 96, Sec. 4, Pei-Ping Rd., Taichung City, Taiwan

Filed Apr. 23, 1992, Ser. No. 872,380

Int. Cl.[5] A63B *49/02, 51/10*

U.S. Cl. 273—73 C **2 Claims**



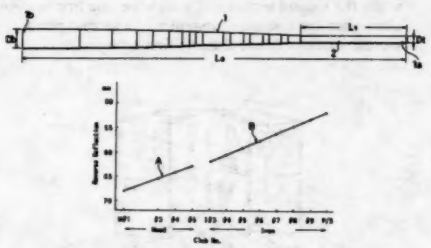
1. A game racket having improved stringing means comprising a head frame, a hand grip, a shaft located between said head frame and said hand grip, and a netted surface formed by strings stretched horizontally and longitudinally across said head frame having a predetermined number of stringing elements through which said strings pass, each length of the strings which traverses the frame forming two turning points located respectively at two opposite sides of a center line of an outer surface of said head frame in such a manner that a line connecting said turning points intersects said center line obliquely and that said netted surface so formed has a front face and a rear face, wherein said game racket is characterized in that said head frame consists of a predetermined number of recess cuts, and that each of said stringing elements has two shoulders parallel to each other and a predetermined number of stringing tubes, with two of said stringing tubes located respectively and correspondingly on said two shoulders coupled by a connection portion, and further that said stringing elements are disposed in such a manner that said stringing tubes thereof are inserted into said recess cuts and that said connection portion covers the side surface of said head frame.

5,192,073

GOLF CLUB SET

Takeshi Iwanaga, Kobe, and Hideaki Kawamatsu, Takarazuka, both of Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Filed Mar. 12, 1991, Ser. No. 668,123
Claims priority, application Japan, Mar. 20, 1990, 2-70828
Int. Cl.[5] A63B *53/00*
U.S. Cl. 273—77 A 9 Claims



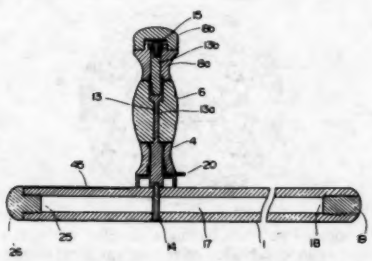
1. A golf club set comprising a plurality of differently numbered wood clubs and a plurality of differently numbered iron clubs, each club including a shaft which diametrically increases stepwise from a head end to a grip end, the shaft of said each iron club including a first step at the head end, each shaft having an overall length L_0, and each first step having a length L_1, the overall length L_0 of the iron club shafts decreasing by an amount ΔL_0 as the iron club number increases by one, the length L_1 of the respective first steps of the iron club shafts decreasing by an amount ΔL_1 as the iron club number increases by one, and wherein ΔL_1 is set larger than ΔL_0, and wherein ΔL_0 and ΔL_1 are of the same sign.

5,192,074

GUARD BATON WITH ROTATING CROSSHANDLE

Hideyuki Ashihara, 360-1, 8-chome, Sanbancho, Matsuyama-shi, Ehime-ken, Japan

Continuation of Ser. No. 588,525, Sep. 26, 1990, abandoned, which is a continuation of Ser. No. 313,003, Feb. 21, 1989, abandoned. This application Jan. 13, 1992, Ser. No. 820,016
Claims priority, application Japan, Feb. 27, 1988, 63-45512; Mar. 19, 1988, 63-66803; May 20, 1988, 63-124713; Dec. 29, 1988, 63-335208
The portion of the term of this patent subsequent to Oct. 23, 2007, has been disclaimed.
Int. Cl.[5] F41B *15/02*
U.S. Cl. 273—84 R 12 Claims



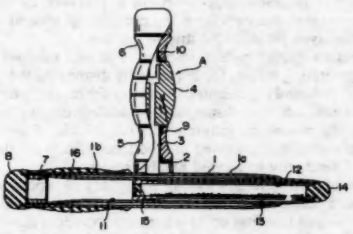
1. A crosshandled guard baton which comprises:
a club having a longitudinal axis and a crosshandle perpendicular to the longitudinal axis of the club and supported internally by a shaft secured to a mounting base located toward one end of said club, said crosshandle having a length substantially equal to the width of a man's palm and comprising a lower grip, a central grip and an upper grip stacked on one another with said lower grip adjacent said mounting base, said shaft being secured internally of said central grip and rotatably supported internally of said lower grip and said upper grip, whereby said central grip and said shaft are rotatable together relative to said upper grip and said lower grip thereby permitting turning movement of said club relative to said lower grip and said upper grip.

5,192,075

TELESCOPING GUARD BATON WITH ROTATABLE CROSS HANDLE

Hideyuki Ashihara, 360-1, 8-chome, Sanbancho, Matsuyama-shi, Ehime-ken, Japan

Continuation of Ser. No. 593,716, Oct. 4, 1990, abandoned, which is a continuation of Ser. No. 394,030, Aug. 15, 1989, abandoned. This application Jan. 17, 1992, Ser. No. 821,884
Claims priority, application Japan, Aug. 22, 1988, 63-209068; Mar. 27, 1989, 1-75529
The portion of the term of this patent subsequent to Oct. 23, 2007, has been disclaimed.
Int. Cl.[5] F41B *15/02*
U.S. Cl. 273—84 R 12 Claims

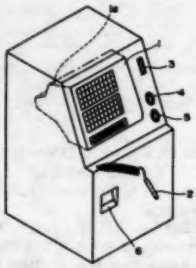


1. A crosshandled guard baton which comprises:
a club having a hollow cylindrical form open at one end;
a crosshandle perpendicular to the club and supported internally by a shaft secured to said club at a position toward one end of said club, said crosshandle having a length substantially equal to the width of a man's palm;
the crosshandle comprising three portional members consisting of an upper, a central and a lower portional member which are stacked on one another with said lower portional member adjacent said club and a slide plane between adjacent portional members, said upper and lower portional members being rotatably supported by said shaft such that the club and said central portional member are rotatable relative to said upper and lower portional members;
at least one diametrically smaller cylindrical member telescopically received internally of the hollow space of the club and having one end extending out of said open end of the club, said at least one diametrically smaller cylindrical member being tapered radially inward at said end extending out of said open end of the club and tapered radially outward at a second end so as to be slidable internally of said club, whereby said at least one diametrically smaller cylindrical member is slidably movable relative to said open end of said club to extend outward of said open end of said club by a swing movement of said club and said radially outward tapered second end is retained internally of said open end of said club.

5,192,076
KENO GAME PLAYING APPARATUS

Takashi Komori, Tokyo, Japan, assignor to Sigma, Inc., Tokyo, Japan

Continuation of Ser. No. 443,492, Nov. 30, 1989, abandoned.
This application Nov. 14, 1991, Ser. No. 793,293
Int. Cl.[5] A63B *71/06*
U.S. Cl. 273—138 A 2 Claims



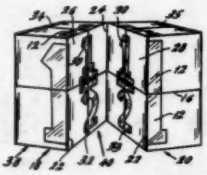
1. A Keno game playing apparatus comprising:
first display means for displaying a plurality of natural numbers;
designating means for designating a plurality of designated numbers chosen by a player from the plurality of natural numbers displayed on said first display means;
random number generating means for randomly generating a subset of numbers comprising a plurality of randomly generated numbers from the plurality of natural numbers displayed on said first display means;
selection display means, responsive to said random number generating means, for sequentially displaying the plurality of randomly generated numbers from the plurality of natural numbers displayed on said first display means;
judging means for judging whether which, if any, of said plurality of designated numbers coincide with the subset of randomly generated numbers; and
second display means having a plurality of blocks arranged in a single line, each of said blocks being sequentially changed to a first color whenever a random number from said subset of numbers coincides with a designated number from said plurality of designated numbers and to a second color whenever a designated number from said plurality of designated numbers does not coincide with a random number from said subset of numbers; said first color being indicative of a player hit; said second color being indicative of a player miss; whereby, the player can visually determine the relative number of hits from misses by looking at the color of each block in the second display means as each random number from the subset of natural numbers is generated.

5,192,077
FRACTION ILLUSTRATING POLYHEDRON

Oswald A. Caicedo, New Milford, N.J., assignor to Sylvia Caicedo, N.J.

Filed Jun. 26, 1992, Ser. No. 904,826
Int. Cl.[5] A63H *33/10*
U.S. Cl. 273—155 8 Claims

1. A polyhedron with indicia carrying sections, comprising:
the polyhedron being comprised of a first plurality of first larger sections which may be assembled together to define the complete polyhedron;
a respective first hinge connecting between each of the first sections and at least another one of the first sections, the first hinge being placed on each first section such that the connected first sections may be assembled together and may be hingedly openable apart around the respective first hinge between them;
at least one of the connected first larger sections having a first surface which is hidden from view when the first sections are assembled together to define the polyhedron and the first surface is so placed on the first section and with respect to the first hinge as to be exposed to view when the first sections are opened apart;
indicia representative of the fraction of the entire polyhedron of which the first section is comprised being defined on the first surface;
at least one of the first sections being comprised of a respective second plurality of second smaller sections which, when the second sections of which the one first section is comprised are assembled together, the second plurality of second sections define the one first section;

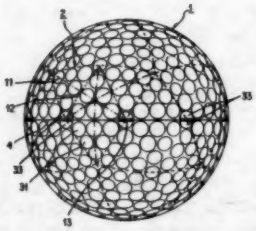


a respective second hinge connecting between each of the second sections and at least another one of the second sections, the second hinge being placed on each second section such that the connected second sections may be assembled together and be hingedly openable apart around the respective second hinge between them;
at least one of the connected second sections having a second surface which is hidden from view when the second sections are assembled together to define the one first section and which is exposed to view when the second sections are opened apart;
indicia representative of the fraction of the entire polyhedron of which the second section is comprised being defined on the second surface.

5,192,078
GOLF BALL

Young-Kyu Woo, Kwangju, Rep. of Korea, assignor to Kumho & Company, Inc., Seoul, Rep. of Korea

Filed Feb. 22, 1991, Ser. No. 659,503
Claims priority, application Rep. of Korea, Apr. 4, 1990, 4677/90
Int. Cl.[5] A63B *37/14*
U.S. Cl. 273—232 7 Claims



1. A molded golf ball having a dimpled spherical surface definable as an icosahedron of regular spherical triangles, and comprising:
two hemispheres joined by a mold-parting line, said mold-parting line being devoid of any dimples and disposed along a great circle of said spherical surface;
a plurality of first dimples disposed within said regular spherical triangles;
a plurality of intersecting points formed by intersections of

sides of some of said regular spherical triangles and said mold-parting line; and

a plurality of pairs of second dimples, with at least one pair of said second dimples being disposed at each of said intersecting points and exhibiting aerodynamic characteristics generally equivalent to at least one of said first dimples, and said second dimples of each said pair being located on opposite sides of said mold-parting line.

5,192,079

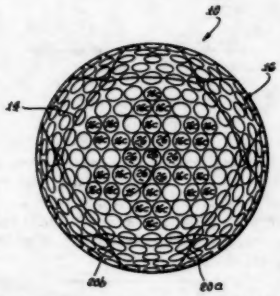
GOLF BALL WITH SMALLER AND LARGER DIMPLES

Donald J. C. Sun, 4521 Ocean Valley La., San Diego, Calif. 92130, and Eric C. P. Kuo, 14501 Maplewood St., Poway, Calif. 92064

Continuation-in-part of Ser. No. 552,089, Jul. 13, 1990, Pat. No. 5,087,048. This application Sep. 16, 1991, Ser. No. 760,088

Int. Cl.[5] A63B *37/14*

U.S. Cl. 273—232 **7 Claims**



1. In a golf ball characterized by enhanced flight distance and enhanced aerodynamic symmetry, the ball having a generally spherical surface with dimple pattern thereon, the improvement comprising:

a) between about 75% and 85% of the ball spherical surface occupied by the dimples,

b) there being dimples of at least two different diameters, all of which have diameters within the range of 0.110 to 0.160 inches,

c) there being multiple dimple intersecting segments or arcs of great circles on the ball surface, which define six-sided spherical surface hexagons associated with axially opposite polar zones,

d) and there being 24 of the smaller dimples within each of said hexagons,

e) the smaller dimples within each said hexagon grouped in clusters symmetrically spaced about an axis of said ball centrally intersecting said hexagons,

f) the ball also having an equator, and certain of said segments or arcs of great circles also defining multiple spherical surface triangles with legs on said equator, and legs coincident with said sides of said hexagon,

g) and wherein there are six of said clusters equally spaced about said axis, in each hexagon, each said cluster comprising four dimples.

5,192,080

BASKETBALL TYPE GAME

Don Duncan, 22718 SW. Johnson Rd., West Linn, Oreg. 97068

Filed Mar. 2, 1992, Ser. No. 844,454

Int. Cl.[5] A63B *67/00*

U.S. Cl. 273—412 **5 Claims**

1. A basketball-type game comprising:

a reduced size ball,

a reduced size backboard having a face surface,

a hoop supported on the face surface of said backboard in angular relation,

and a handle depending integrally from said backboard by means of which a person can grasp and hold the backboard and hoop in an upright position with one hand and maneuver it so that said ball when approaching the person can by skill of the person be caused to pass through the hoop,

said handle including an integral downward extension on a lower portion thereof angled relative to said handle so as to lie in abutted engagement against the wrist when said handle is gripped in the hand for playing.

5,192,081

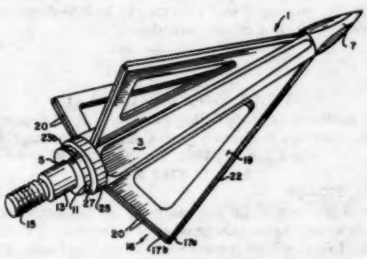
MULTI-BLADE ARROWHEAD

Gary L. Cooper, HC-04 Box 62, Pocahontas, Ark. 72455

Filed Jan. 9, 1990, Ser. No. 462,455

Int. Cl.[5] F42B *6/08*

U.S. Cl. 273—422 **9 Claims**



1. In an arrowhead including an elongated ferrule, the improvement comprising at least one blade cluster mounted on said ferrule, said blade cluster comprising a plurality of blades mounted in side-by-side relation on said ferrule, said blades having webs parallel with one another and sharp edges spaced from one another to produce a channel cut as they penetrate, each of said blades including a blade web, a blade base, and front and rear mounting fingers at opposite ends of said base, said blades being mounted in axially extending groves in said ferrule and being mounted to said ferrule at their rear ends by a collar which covers said mounting fingers, said collar being held in securing position by said shaft.

5,192,082

TV GAME MACHINE

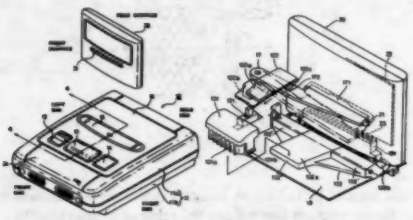
Yoshihiro Inoue, Kyoto, and Kenichiro Ashida, Amagasaki, both of Japan, assignors to Nintendo Company Limited, Kyoto, Japan

Continuation of Ser. No. 748,938, Aug. 23, 1991, abandoned. This application Aug. 12, 1992, Ser. No. 928,076

Claims priority, application Japan, Aug. 24, 1990, 2-89036[U]; Nov. 1, 1990, 2-115097[U]

Int. Cl.[5] A63F 9/22

U.S. Cl. 273—435 10 Claims



1. A TV game machine to and from which a cartridge storing a game program can be attached and detached, for executing processes for a game by reading the game program from the attached cartridge, comprising:

a housing having a hole for inserting said cartridge at an upper surface; and

a power switch mechanism provided related to the upper surface of said housing; wherein

said cartridge has a flat shape with one and the other major surfaces, and a locking groove extending in horizontal direction formed approximately at the center of one major surface;

said power switch mechanism includes

a slide switch slidably provided on the upper surface of said housing,

a power switch contained in said housing and turned on/off in response to operation of said slide switch, and

locking means axially supported in said housing and rotated in response to operation of said slide switch, a part of which is fit in the locking groove of said cartridge when it is rotated; whereby

when said cartridge is attached to said housing and said power switch is turned on, said lock means is fit in the locking groove of said cartridge to lock said cartridge to prevent ejection of the cartridge.

5,192,083

SINGLE RING SECTOR SEAL

Henry F. Jones, Jr., and Wilbur Shapiro, both of Schenectady, N.Y., assignors to Dresser-Rand Company, Corning, N.Y.

Filed Jan. 16, 1992, Ser. No. 821,789

Int. Cl.[5] F16J 9/00

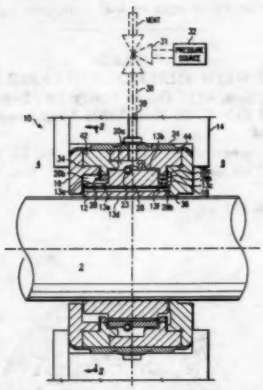
U.S. Cl. 277—29 20 Claims

1. A single ring sector seal assembly for mounting around a shaft for sealing against the passage of high pressure fluid along said shaft from a high pressure side of said seal assembly to a low pressure side of said seal assembly, said seal assembly comprising:

a seal housing adapted to be circumferentially located around said shaft;

at least two arcuate sectors adapted to be circumferentially positioned about said shaft and joined together to collectively form a single ring sector seal having an annular outer surface and an annular inner seal surface, with a fluid film between said annular inner seal surface and said shaft during the motion of said shaft, said sectors being encircled by and in floating relationship to said seal housing, said annular outer surface comprising first, second, and third annular portions, said second annular portion being positioned between said first and third annular portions;

an annular vent chamber formed by said seal housing and said second annular portion and isolated from said high pressure side of said seal assembly; and



means to vent said vent chamber to a suitable low pressure environment in order to maintain the pressure in said vent chamber substantially below the pressure of said high pressure side of said seal assembly while said shaft is in motion, thereby preventing contact of said sectors with the moving shaft.

5,192,084

BRUSH SEAL ARRANGEMENT

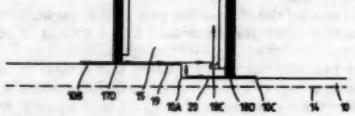
David S. Norbury, Bristol, England, assignor to Rolls-Royce plc, London, England

Filed Dec. 10, 1991, Ser. No. 805,329

Claims priority, application United Kingdom, Dec. 12, 1990, 9026971

Int. Cl.[5] F16J 15/447

U.S. Cl. 277—53 5 Claims



1. A brush seal arrangement to effect sealing between relatively rotating first and second coaxial members which define therebetween an axially extending annular enclosure, the enclosure having in axial sequence a high pressure fluid region, a low pressure fluid region, and a intermediate pressure fluid region having a pressure between that of the high and low pressure regions,

the arrangement being provided by first and second radially disposed brush seals secured to the first member, the first seal being located between the high pressure region and the low pressure region, and the second seal being located between low pressure region and the intermediate pressure region,

the axial width of the annular enclosure in the high pressure region being less than the axial width of the annular enclosure in the intermediate pressure region, the difference in

width being provided by a step in the radius of the second member within the low pressure region,

wherein there is provided between the step and the second seal adjacent the distal end of the second seal but spaced from the second member an element adapted to direct high pressure fluid leaking past the first seal away from the contact region of the second seal with the second member.

5,192,085

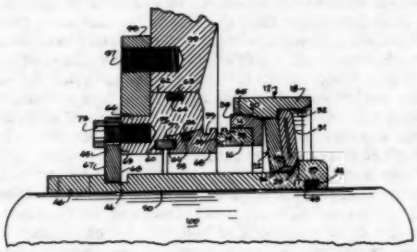
RUBBER DRIVE SYSTEM MECHANICAL SEAL

Robert McOnie, 1485 A 29th St., Kenner, La. 70062

Continuation-in-part of Ser. No. 628,372, Dec. 17, 1990, abandoned. This application Mar. 2, 1992, Ser. No. 847,748

Int. Cl.[5] F16J *15/38*

U.S. Cl. 277—81 S **18 Claims**



1. A split ring mechanical seal device for use in rotating equipment, comprising:

a rotating drive sleeve;

means for sealably securing said rotating drive sleeve to the shaft of said rotating equipment;

a fractured rotating seal ring with wear face;

a fractured stationary seal ring with wear face;

an annular cone spring removably engaged at its inner periphery to said drive sleeve and removably engaged at its outer periphery to said fractured rotating seal ring whereby a compressive force is applied tending to thrust said wear faces together;

an elastomeric cup fixably bonded to said fractured rotating seal ring, said cup being cut entirely through its cross section at a point directly adjacent to a fracture line of said rotating seal ring;

an 'O' ring engaging said fractured stationary seal ring, said 'O' ring being split at a point directly adjacent to a fracture line of said stationary seal ring;

means for flexibly and sealably transferring rotary motion of said drive sleeve to said rotating seal ring;

means for sealably securing said stationary seal ring to the vessel wall of said rotating equipment, and

means for pre-setting the amount of said compressive force tending to thrust said ware faces together.

5,192,086

DOUBLE RAMP, FULL LENGTH GRIP COLLET

James L. Bucks, 7353 Cadle Ave., Mentor, Ohio 44060

Filed Jul. 9, 1991, Ser. No. 727,650

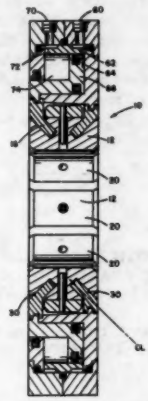
Int. Cl.[5] B23B *31/20*

U.S. Cl. 279—4.09 **16 Claims**

1. A collet chuck for gripping an associated workpiece, said collet chuck comprising:

first and second actuating rings, each actuating ring having an inward and an outward surface and a sliding section, said sliding section having a configuration of a portion of the surface of a cone; and,

a plurality of slide blocks, each slide block having an inward surface and an outward surface and two side surfaces, each of said blocks having a radial centerline, each of said blocks having a pair of opposed slots, said slots having a configuration of a portion of the surface of a cone, each of one of said slots slidably receiving one of said sliding sections of said actuating rings therein, a centerline of



each of said slots of one of said slid blocks intersecting the radial centerline of one of said slide blocks at an angle whereby movement by one of said actuating rings causes radial movement of said slide block.

5,192,087

DEVICE FOR SUPPORTING A WAFER

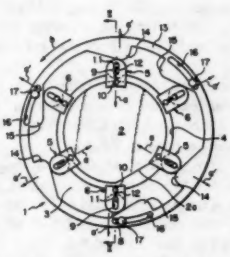
Hideaki Kawashima, and Kouhei Eguchi, both of Sagamihara, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Oct. 2, 1991, Ser. No. 769,432

Claims priority, application Japan, Oct. 2, 1990, 2-264488; Oct. 12, 1990, 2-274566

Int. Cl.[5] B23B *31/171*

U.S. Cl. 279—71 **5 Claims**



1. A device for supporting a wafer, comprising:

a base plate;

a group of first supports circumferentially arranged at regular intervals on said plate to support a periphery of the wafer above said plate, and a group of second supports circumferentially arranged on said plate, in spaced relation to each of the first supports, to support the periphery of the wafer above said plate, each of the first and second supports being movable between a supporting position for supporting the wafer and a releasing position, radially outward of said supporting position, in which the support is released from the wafer;

releasing means urging each of said first and second supports radially outwardly toward said releasing position; and

means for alternatively

(1) moving each of said first supports into said supporting position while simultaneously allowing said releasing

means to urge each of said second supports into said releasing position or

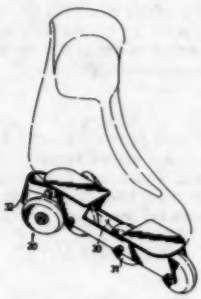
(2) moving each of said second supports into said supporting position while simultaneously allowing said releasing means to urge each of said first supports into said releasing position, said alternatively moving means including an annular member rotatably mounted on said base plate, said annular member having a plurality of internal projections circumferentially arranged along an inside surface of said annular member in correspondence with said first and second supports.

5,192,088

ROLLER SKATE WITH DEVICE FOR ASSISTING THE TURNING AND BRAKING ACTION THEREOF

Chung-Hsiung Yu, 2nd Fl., No. 94, Chung-Yuan St., Taipei City, Taiwan

Filed Mar. 2, 1992, Ser. No. 844,726
Int. Cl.[5] A63C *17/06*
U.S. Cl. 280—11.22 10 Claims



1. A device for assisting the turning and braking action of a roller skate which has rollers aligned along an axis extending between a first end and a rear end of said roller skate, comprising:

at least one mounting seat to be attached to the roller skate adjacent to at least one of said ends, said mounting seat including a plate which has a first end, a second end, two mounting arms extending upward from said first end and said second end of said plate, said mounting arms adapted to be connected to said roller skate along said axis of aid roller skate, a main screw member provided at a point on said axis of said roller skate and two adjustment screw members on two sides of said axis;

a pair of mounting shafts mounted on said mounting seat and extending in a fashion that they form an angle therebetween and that they are symmetric with respect to said axis of said roller skate, each of said mounting shafts having a flat end, said flat end having a main screw hole through which said flat end is screwed to said plate via said main screw member; and

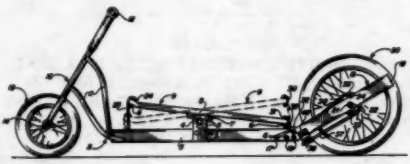
a pair of auxuliary rollers mounted respectively to said mounting shafts so that they lie in two imaginary planes which are perpendicular to said mounting shafts, respectively, and which form an angle therebetween, said flat end of each of said mounting shafts further having an elongated adjustment slot outward of said main screw hole to receive a respective one of said adjustment screw members, whereby the angle between said auxiliary rollers can be adjusted so that said auxiliary rollers are symmetric with respect to said axis of said roller skate.

5,192,089

PEDAL-OPERATED SCOOTER

Walter R. Taylor, Rte. 2, Box 181, Rayville, La. 71269

Filed Nov. 22, 1991, Ser. No. 796,471
Int. Cl.[5] B62M *1/00*
U.S. Cl. 280—221 20 Claims



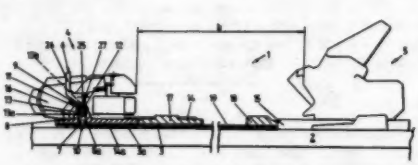
1. A pedal-operated vehicle comprising a frame having at least two wheels; pedal means pivotally mounted on said frame for receiving an operator; a pair of sprockets carried by one of said wheels in forwardly-driving and rearwardly freely-rotating relationship and a pair of sprocket chains engaging said sprockets, respectively; first pulley means carried by said frame and a front cable engaging said first pulley means and having one end attached to the front portion of said pedal means and the opposite end of said front cable attached to one end of one of said sprocket chains; second pulley means carried by said frame and a rear cable engaging said second pulley means and having one end attached to the rear portion of said pedal means and the opposite end of said rear cable attached to one end of the other one of said sprocket chains; and bias means connecting the opposite ends of said sprocket chains, whereby said sprockets are alternately deployed in said forwardly-driving relationship for propelling said vehicle forwardly in drive mode and in said rearwardly free-rotating relationship, responsive to pivotal operation of said pedal means and the tension in said bias means, respectively.

5,192,090

SKI BINDING COMPONENT, PARTICULARLY A FRONT JAW

Klaus Damborsky, Klosterneuburg-Kierling, Austria, assignor to HTM Sport- und Freizeitgeraete Gesellschaft m.b.H., Schwechat, Austria

PCT No. PCT/EP91/00062, § 371 Date Sep. 27, 1991, § 102(e) Date Sep. 27, 1991, PCT Pub. No. WO91/11231, PCT Pub. Date Aug. 8, 1991
PCT Filed Jan. 16, 1991, Ser. No. 768,274
Claims priority, application Austria, Feb. 5, 1990, 231/90
Int. Cl.[5] A63C *9/22*
U.S. Cl. 280—634 4 Claims



1. In a ski binding, comprising a guide rail adapted to be fastened on an upper side of a ski, and a jaw unit guided on said guide rail for movement in a longitudinal direction of the ski and being selectively fixed in predetermined positions on said guide rail by a locking device which has a movable locking part supported on said jaw unit and for movement, urged by a force of a spring, into selective reception in one of a plurality of complementary locking recesses in said guide rail, said locking part including an operating member pivotally supported for movement about a pivot axis for facilitating said locking part becoming disengaged from said complementary locking recess, said operating member having at least first and

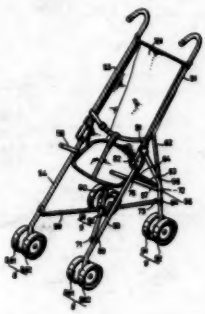
second surfaces each being oriented at a different first and second distance from said pivot axis and thus determining a locked and an unlocked condition of said locking device, said first and second surfaces being held in said locked and unlocked conditions urged by said spring against a complementary surface on said jaw unit, the improvement wherein said operating member includes a further, third surface spaced a still different third distance from said pivot axis, wherein said guide rail includes a front portion and a rear portion, said jaw unit being movably supported on said front portion, a heel holder being movably supported on said rear portion of said guide rail, said heel holder having a metal band extending forwardly thereof to a position underlaying said jaw unit, said metal band and said front portion of said guide rail being in superposed relation, said metal band being movable longitudinally of the ski with said heel holder and relative to said front portion of said guide rail, said heel holder being prevented from lifting away from the ski by said rear portion of said guide rail, wherein said locking part and said operating member together define first and second locking positions, said first locking position effectively locking said jaw unit and said metal band to said front portion of said guide rail, whereas said second locking position effectively locking only said jaw unit to said front portion of said guide rail, said metal band together with said heel holder, in said second locking condition, being movable in said longitudinal direction of the ski and a desired position by said locking device when in said first locking position.

5,192,091

FOLDING TOY BABY CART

Kun-Hei Liu, 2F, No. 32, Lane 200, Tung Hwa Street, Taipei, Taiwan

Filed Apr. 9, 1992, Ser. No. 865,986
Int. Cl.[5] B62B 7/08
U.S. Cl. 280—644 **4 Claims**



1. A folding toy baby cart which comprises of a canvass stretched on a folding frame assembly, said folding frame assembly comprised of a pair of handle rods, a pair of front wheel rods respectively having a top connected by a first U-shaped connection and a first fastening bolt to said handle rods and a bottom holding a front wheel assembly, a pair of rear wheel rods respectively having a top connected to said handle rods by a second U-shaped connection and a second fastening bolt and a bottom holding a rear wheel assembly, a pair of side rods respectively connecting said front wheel rods and said rear wheel rods by third fastening bolts, two bottom rods pivoted together at respective centers thereof by a fourth fastening bolt and crossedly connecting between said front wheel rods and said rear wheel rods by first L-shaped connections and fifth fastening bolts, two back rods pivoted together at respective centers thereof by a sixth fastening bolt and crossedly connecting said handle rods by second L-shaped connections and seventh fastening bolts and said rear wheel rods by eighth fastening bolts, two connecting plates with one end thereof foldably connected to each other by a ninth fastening bolt and an opposite end thereof respectively connected to said back rods by a tenth fastening bolt, two connections with one end thereof respectively connected to said connecting plates and said back rods by eleventh fastening bolts and an opposite end thereof respectively connected to said side rods by twelfth fastening bolts,

wherein said handle rods; said front wheel rods; said rear wheel rods; said side rods; said bottom rods; said back rods; said connecting plates; said two connections; said first and second U-shaped connections; said first and second L-shaped connections; said first, second, third, fourth, fifth, sixth, seventh, eight, ninth, tenth, eleventh and twelfth fastening bolts are made of impact resistant plastic material;

said first, second, third, fourth, fifth, sixth, seventh, eight, ninth, tenth and eleventh and twelfth fastening bolts having a shape of a cylindrical rod with heads at each end thereof with a larger diameter than said cylindrical rod, one of said heads having a cone shape with a pointed end thereof facing outward relative to said cylindrical rod, and

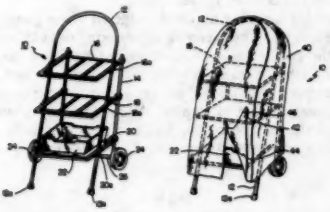
said first U-shaped connections are respectively integrally formed with said front wheel rod, said second U-shaped connections are respectively integrally formed with said handle rod, said first L-shaped connections are respectively integrally formed with said front wheel rods and said rear wheel rods, said first L-shaped connections respectively surround said front wheel rods and said front wheel rods and have an extended tab with a hole for receiving said fifth fastening bolts, and said second L-shaped connections are respectively integrally formed with said handle rods, said second L-shaped connections respectively surround said handle rods and have an extended tab with a hole for receiving said seventh fastening bolts.

5,192,092

RECYCLING BIN CART

Richard DiBenedetto, 27202 S.W. 164th Ave., Homestead, Fla. 33031

Filed Mar. 21, 1991, Ser. No. 674,080
Int. Cl.[5] B62B 1/12
U.S. Cl. 280—654 **4 Claims**



1. A recycling bin cart for storing and transporting a plurality of recycling bins comprising:

a rigid axle; a pair of wheels attached at opposite ends of said rigid axle; a first rigid frame having at least three sides rectangularly disposed and attached for vertical disposition relative to said rigid axle;

first and second movable shelves spaced a predetermined distance apart for horizontal disposition in a working position and sufficiently sized to receive recycling bins with additional space for placing objects in said recycling bins, said first and second shelves attached along one side to said rigid vertical support frame;

a vertical U-shaped frame movably coupled to said first and second shelves, said vertical frame including legs for engaging the ground and a U-shaped handle at the opposite end, said U-shaped frame having a first position,

whereby the first and second shelves are horizontally locked in a position and a second position where the first and second shelves are rotated and oriented vertically for a storage position;

a cover support frame mounted above said first two shelves and attached to said rigid vertical frame movably to said U-shaped vertical support frame movably, said cover support frame extended horizontally in the locked position of said vertical frame member; and

a decorative covering means shaped to fit over and surround said cart, including a curved portion for engagement with said U-shaped handle of said vertical U-shaped frame and a cylindrical portion to engage said cover support frame;

said cover means including a flap area for access to bins mounted on said cart, said cover means including a fabric fastening means for holding the cover in an open position and disengagement for closing the cover.

5,192,093

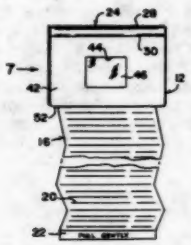
INDICIA CARD STORAGE DEVICE

Andre L. Zeisky, 55 W. 14th St., Apt. 4-D, New York, N.Y. 10011, and Maurice Grunfeld, 37 Doral Ct., New City, N.Y. 10956

Filed Apr. 20, 1992, Ser. No. 872,680

Int. Cl.[5] B42D *19/00*

U.S. Cl. 281—5 **4 Claims**



1. An indicia card storage device which comprises:

a) a pair of planar opposed covers;

b) an elongated sheet having a plurality of foldable panels with indicia thereon and a foldable pull strip on a lower edge of the bottom panel; and

c) means for securing an upper edge of a top panel of said elongated sheet between an upper edge of said covers, so that the panels can be folded up and stored between said covers, wherein said securing means is a heat seal formed at the upper edge of said covers and the upper edge of the top panel of said elongated sheet, whereby a user may unfold the pull strip and pull out all the panels causing them to be unfolded and spread out for viewing.

5,192,094

EXPANSION PIPE JOINT

Kiyoshi Hamamoto, Suita, Japan, assignor to Yano Giken Co., Ltd., Osaka, Japan

Filed Feb. 3, 1992, Ser. No. 829,897

Claims priority, application Japan, Feb. 8, 1991, 3-17187

Int. Cl.[5] F16L *27/04*

U.S. Cl. 285—165 **6 Claims**

1. An expansion pipe joint comprising:

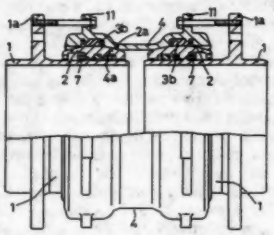
a pair of inner sleeve means, having substantially the same shape, each said inner sleeve means including an annular projection formed on an outer surface thereof;

a pair of outer sleeve means, having substantially the same shape, for receiving said pair of inner sleeve means to be axially slidable relative to and inseparable from said pair of inner sleeve means, each of said outer sleeve means including an annular groove formed on an inner surface thereof;

ring means mounted in said annular groove for engaging said annular groove and said annular projection along a circumferential direction;

a casing pipe surrounding said pair of outer sleeve means and interconnecting said pair of outer sleeve means;

wherein each of said outer sleeve means defines an inner end portion through which said annular projection is inserted



to a position spaced further from said inner end portion than said ring means;

said ring means is C-shaped with a portion thereof cut out so as to be elastically deformable radially outwardly; and

said annular projection is placed further from said inner end portion than said ring means by elastically deforming said ring means radially outwardly in said annular groove.

5,192,095

COUPLING DEVICE

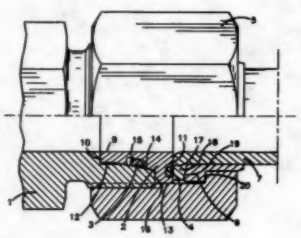
Gunter Behrens, Schlob-Holte, Fed. Rep. of Germany, assignor to Parker Ermeto GmbH, Bielefeld, Fed. Rep. of Germany

Filed Nov. 1, 1991, Ser. No. 786,446

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1990, 4034803

Int. Cl.[5] F16L *25/00*

U.S. Cl. 285—332.1 **8 Claims**



1. A coupling device, comprising:

a coupling body of the type having an outer thread, an internal bore and an inner bevel;

a pipe with an outwardly flared flange;

a nut with an inner thread which mates with the outer thread of the coupling body for threaded connection thereto and an inner flange which is captured by the outwardly flared flange of the pipe; and

an adapter piece which is received in said coupling body so that said nut can be extended over said adapter piece to threadedly join said coupling body with said pipe with said adapter piece pressed therebetween by the tightening of the nut, said adapter piece having an outer bevel which mates with the inner bevel of the coupling body, and radially arranged end ring faces of different dimensions disposed at opposite axial ends of said adapter piece at least one of which forms a sealing face with a sealing ring disposed for mating with and sealing against said outwardly flared flange of said pipe.

5,192,096

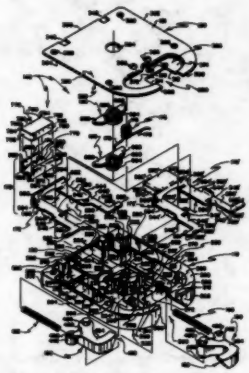
DOOR LOCK ASSEMBLY

Lee S. Weinerman, Medina; John V. Pastva, Jr., Parma Hts., and Steven A. Mayo, Akron, all of Ohio, assignors to The Eastern Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 665,982, Mar. 7, 1991, and a continuation-in-part of Ser. No. 666,404, Mar. 7, 1991, and a continuation-in-part of Ser. No. 666,793, Mar. 8, 1991. This application Dec. 4, 1991, Ser. No. 802,204

Int. Cl.[5] E05C *3/34*

U.S. Cl. 292—45 30 Claims



1. A lock assembly, comprising:

a) housing means including first and second housing members having wall portions thereof that extend in spaced, substantially parallel planes for defining a hollow housing interior that is bounded at least in part by formation means for protectively housing and operably mounting selected operating components of the lock assembly within the hollow interior, with the housing means having first and second end regions thereof that are spaced one from the other along an imaginary center plane that extends substantially centrally through the hollow interior and substantially perpendicular to said spaced parallel planes, with the housing means including passage-defining means located near said first end region for defining a keeper-receiving passage that extends along an imaginary passage axis that extends within the center plane and extends substantially perpendicular to said spaced parallel planes, with the keeper-receiving passage being configured to receive portions of a keeper therein when the housing means and the keeper portions are moved relatively toward each other, with the passage-defining means including opposed first and second wall portions that face toward each other and extend along opposite sides of said passage axis and along opposite sides of said center plane so as to be located substantially symmetrically about the center plane, with the passage-defining means also defining opposed first and second latch-member-receiving passages that open through the opposed first and second wall portions into opposite sides of the keeper-receiving passage, with the housing means including lock operator mounting means located near said second end region for mounting lock operator means for rotation about a lock operator axis that extends within the center plane and extends substantially perpendicular to the spaced parallel planes, and with said wall portions of the housing means cooperating to define said hollow housing interior such that it includes first and second communicating portions that are adjacent to each other but are located on opposite sides of said center plane, with the first and second communicating portions cooperating to define a common central chamber that extends from a first end region thereof to a second end region thereof in a manner that is substantially symmetrical in configuration with respect to said center plane, with the housing means having opposed pairs of guide surfaces extending in parallel, end-to-end directions and being arranged symmetrically about the center plane so as to provide slide-guide surfaces at various locations within the central chamber, with the first and second latch-member-receiving passages opening into the first end region of said first and second portions of the central chamber, respectively, to thereby communicate the keeper-receiving passage with a first end region of the central chamber, and with the lock operator mounting means including aligned holes formed through the first and second housing members and opening into the second end region of the central chamber;

b) operating component means connected to the housing means and having at least portions thereof that are protectively housed by the central chamber, including:

i) first and second latch members pivotally connected to the housing means for movement about parallel pivot axis that are spaced equidistantly from the center plane but are located on opposite sides thereof within the first end region of the central chamber, with the latch members each having a base portion that extends from the location of the associated pivot axis in a direction extending away from said center plane toward an associated abutment location with the abutment locations being near opposite peripheral portions of the first end region of the central chamber, and with the latch members having abutment formations connected thereto at said abutment locations, with the latch members also having oppositely curved hook-shaped latching formations that extend away from the base portions and into the latch-member-receiving passages, and with the latch members also having keeper engagement formation means defined on distal end regions of the latching formations for releasably latchingly engaging keeper portions that may be positioned so as to extend into the keeper-receiving passage;

ii) latch member biasing means interposed between the housing means and the first and second latch members for biasing the latch members oppositely about their associated pivot axes to bias the keeper engagement formations toward each other so as to extend into latching engagement with such keeper portions as may be positioned to extend into the keeper-receiving passage;

iii) slide means slidably supported within the central chamber of the housing means and having abutment means connected thereto for extending into the first end region of the central chamber for abuttingly engaging the abutment formations of the latch members for concurrently pivoting the first and second latch members in opposite directions abut their associated pivot axes to effect "unlatching" movement of the first and second latch members from engagement with such keeper portions as may be positioned to extend into the keeper-receiving passage, with the aforesaid unlatching movement serving to retract the keeper engagement formation means into the latch-member-receiving passages to release their engagement with such keeper portions as may be positioned to extend into the keeper-receiving passage, with said "unlatching" movement of the latch members resulting from sliding type of corresponding unlatching movement executed by the slide means being moved within the central chamber in a direction extending away from the first end region thereof and toward the second end region thereof, and with the slide means having first driving formation means that extends transversely within the second end region of the central chamber a location near said lock operator axis;

iv) slide biasing means interposed between the housing means and the slide means for biasing the slide means away from the second end region of the central chamber and toward the first end region of the central cham-

ber so that said sliding type of unlatching movement of the slide means is opposed by the slide biasing means;

v) lock operator means pivotally connected to the housing means for pivoting about the lock operator axis, with the lock operator means having second drive formation means for extending into said second end region of the housing means and into driving engagement with the first driving formation means for effecting unlatching movement of the slide means in response to pivotal unlatching movement of the lock operator means about said lock operator axis;

c) said slide means includes a sheet metal stamping that is characterized by a generally U-shaped configuration that is symmetric about the center plane in that it includes first and second leg formations that are mirror images of each other, that define a plurality of edge surface formations for extending into sliding engagement with said slide-guide surfaces at said various locations within the central chamber, that have oppositely extending foot-like formation means that are located within the first end region of the central chamber for defining said abutment formation means, and that extend into the second end region of the central chamber where the first and second leg formations join with an integrally-formed bridging leg that extends transversely through the second end region of the central chamber so as to cross the center plane relatively near to the lock operator axis, with the bridging leg being configured to define at least a portion of the first driving formation means, with the first and second leg formations being substantially flat and extending in a substantially common plane that parallels said spaced, substantially parallel planes of the housing means except that, at locations midway along the lengths of the first and second leg formations, a first pair of upwardly turned, tab-like formations is provided for engaging the slide biasing means, and a second pair of upwardly turned, tab-like formations is provided for enhancing the area of contact between said edge surfaces of the first and second leg formations and a selected pair of said opposed slide-guide surfaces, and with the bridging leg extending in a plane that is substantially perpendicular to said common plane so as to define a relatively flat, thin bridging leg that is drivingly engaged by the lock operator means to effect unlatching movement of the slide means in response to pivotal movement of the lock operator means about the lock operator axis;

d) a selected one of the first and second housing members is formed as a substantially flat sheet metal stamping while the other of the first and second housing members is formed as a cast metal part that provides the majority of the thickness of the resulting assembly of the first and second housing members, with both of the first and second housing members nonetheless contributing to the definition of the opposed first and second wall portions that face toward each other and extend along opposite sides of the keeper-receiving passage;

e) said selected one of the first and second housing members being formed as a substantially flat sheet metal stamping;

f) a portion of said selected housing member being pressed inwardly toward said other of the housing members to provide a substantially flat C-shaped surface portion that extends in a plane that is located inwardly relative to a plane in which a majority of the remainder of the portions of said selected housing member extend; and,

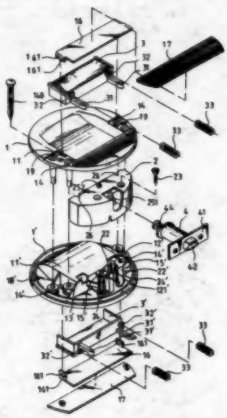
g) said C-shaped surface portion overlying at least portions of the first and second wall portions that extend along opposite sides of the keeper-receiving passage so as to contribute to the definition of portions of the opposed first and second latch-member-receiving passages.

5,192,097

PLASTIC DOOR LOCK

Jyh-Yeong Su, Kaohsiung, Taiwan, assignor to Jyi Shen Industrial Co., Ltd., Taipei, Taiwan

Filed Mar. 23, 1992, Ser. No. 855,865
Int. Cl.[5] E05C *1/14*
U.S. Cl. 292—166 **10 Claims**



1. A door lock comprising opposed, substantially flat inner and outer cover plates each of which is recessed to receive therein an associated drag unit slidable relative to the cover plate between a rest position and a displaced position, a core unit located between said cover plates including a pair of dragging elements each being pivotal, about an associated axis extending substantially perpendicular to the plane of the sliding movement of the drag units, between a rest position and a displaced position, said dragging elements co-operating with a latch unit whereby, on movement of the dragging elements from their rest positions to their displaced positions, the latch unit is moved from a normally closed position to an open position, and a limit switch pivotally mounted on the inner cover plate between a locked position and an unlocked position, said limit switch being formed with a notch having an associated surface position, the arrangement being such that, with the limit switch in the unlocked position, both of the drag units can be moved relative to the associated cover plate from their rest positions to their displaced positions to engage associated dragging elements to pivot said dragging elements and to actuate the latch unit with at least a portion of the inner drag unit being permitted to freely extend through the notch formed in said limit switch and, with the limit switch in its locked position, movement of the outer drag unit is prevented but, on initial movement of the inner drag unit from its rest position towards its displaced position, the inner drag unit engages the surface portion associated with said notch to cause the limit switch to be pivoted by said inner drag unit from its locked position to its unlocked position, said inner drag unit further engaging a dragging element to pivot said element towards its displaced positions to actuate the latch unit.

5,192,098

LATCH CONSTRUCTION

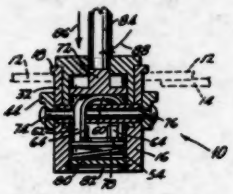
Michael Barnes, Newtown, and Joseph Koskelowsky, Danbury, both of Conn., assignors to Norco, Inc., Ridgefield, Conn.

Filed Aug. 28, 1991, Ser. No. 751,312
Int. Cl.[5] E05C *1/16*
U.S. Cl. 292—207 **6 Claims**

1. A releasable latch construction for holding in place panels and the like, comprising in combination:

a) a body member having means for attaching it to a panel,

b) a latching member and means turnably mounting the same on the body member for arcuate movement between a latching position and a releasing position,
c) locking means movably carried by the body member, operable to lock the latching member in either its latching position or else in its releasing position,
d) actuator means movably carried in the body member and engageable with said locking means to actuate the latter for effecting either the locking or else the release of said latching member, and



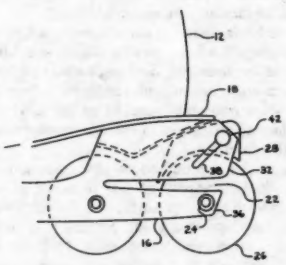
e) keying means connected with said latching member, said keying means being directly engageable by a latch key to enable the latter to apply turning forces to the latching member and said actuator means being directly engageable by said latch key and being shiftable thereby to effect unlocking of the latching member,
f) said locking means comprising a slide member movable axially of said body member, and restrained against turning with respect thereto.

5,192,099

ROLLER SKATE STARTING AND STOPPING AIDS

Raine R. Riutta, 7816 Jasper Crescent, Vancouver, British Columbia, Canada V5P 3S9

Filed Aug. 27, 1991, Ser. No. 751,162
Int. Cl.[5] A63C *17/14*
U.S. Cl. 280—11.2 **4 Claims**



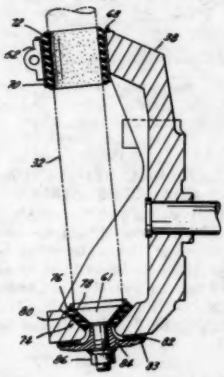
1. A roller skate comprising:
(a) a boot;
(b) a plurality of wheels;
(c) wheel support means adapted to be rigidly secured to said boot, said wheel support means including first and second parallel spaced integral side frame members disposed on opposite sides of said wheels, each of said members having a first slot extending forwardly from a rearmost end of said member to define upper and lower spaced portions with free ends, said upper portion being rigidly secured to said boot and said lower portion rotatably supporting a rearmost wheel of said plurality of wheels, said upper and lower portions being an integral part of said member, said lower portion being capable of flexure to move towards said upper portion upon application of a downward force on said upper portion by said boot; and,
(d) a brake pad coupled between said upper portions and located between said boot and said rearmost wheel, wherein said brake pad is adapted to engage said rearmost wheel upon application of said downward force on said upper portion by said boot for applying a braking force to said rearmost wheel.

5,192,100

INDEPENDENT SUSPENSION WITH DOUBLE ISOLATED SUSPENSION UNIT

Manfred Rumpel, Birmingham, and Sino J. Van Dyk, Plymouth, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 26, 1990, Ser. No. 634,253
Int. Cl.[5] B60G *11/56*
U.S. Cl. 280—668 **17 Claims**



1. An independent suspension for a vehicle, comprising:
a chassis;
an upwardly extending telescopic suspension unit;
means connecting the upper end of said suspension unit to said chassis; and
a wheel support member for rotatably mounting a road wheel, said wheel support member including double isolation means for resiliently mounting the lower end of said suspension unit to said wheel support member and for rotating said wheel support member relative to said suspension unit about a substantially vertical axis during compression and rebound movement of said wheel support member.

5,192,101

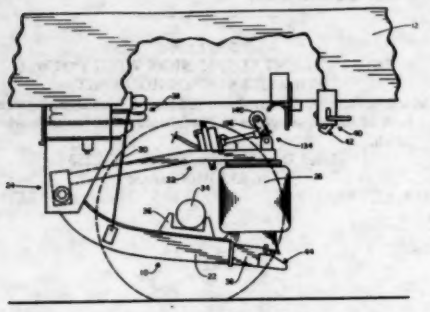
LOCK MECHANISM FOR AN AXLE LIFT SUSPENSION

Gregory A. Richardson, Holton, Mich., assignor to Neway Corp., Muskegon, Mich.

Filed Oct. 15, 1991, Ser. No. 776,667
Int. Cl.[5] B60G *11/26*
U.S. Cl. 280—704 **6 Claims**

1. An axle lift suspension apparatus for a vehicle having a frame, the apparatus comprising:
an arm pivotably mounted to the frame;
an axle adapted to carry a ground engaging wheel and mounted to the arm;
lifting means to selectively move the arm and the axle to and from a lifted position relative to the frame; and
a latch assembly mounted to the frame and adapted to automatically engage the arm when the arm is in the lifted position and restrain it from movement away from the lifted position, the latch assembly comprising a support bracket mounted to the frame, and a latch plate pivotably mounted to the support bracket for movement between a catch position and a reset position, the support bracket

having an elongated aperture, and a rod extending through the aperture and mounted relative to the frame



for rotational movement about its longitudinal axis, the latch plate being fixedly mounted to the rod.

5,192,102

BASIC FRAME ARRANGED ON THE CARRYING CHASSIS OF A TRUCK

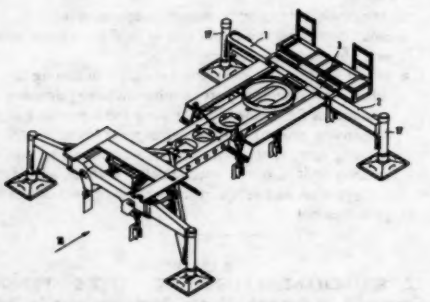
Armin Mertens, Munich; Peter Hinze, Altomünster Randelsried; Rudolf Ebert, Karlsfeld, and Herbert Grach, Unterschleissheim, all of Fed. Rep. of Germany, assignors to MAN Nutzfahrzeuge Aktiengesellschaft and Siemens Aktiengesellschaft, both of Munich, Fed. Rep. of Germany

Filed Nov. 15, 1991, Ser. No. 792,817

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1990, 4040267

Int. Cl.[5] B60S *9/12*

U.S. Cl. 280—766.1 **6 Claims**



1. A basic frame on the carrying chassis of a truck for receiving units changeable in orientation and extendable in a plurality of directions, said basic frame having at least one transverse hollow beam and struts extendable in a direction of width, said struts having supports arranged at a respective end thereof that are vertically lowerable, said extendable struts guided in said hollow beam and telescopically movable in a longitudinal direction thereof into a desired extended position by a signal transmitted by a control device, said basic frame further comprising electromechanical switches arranged on said hollow beam, said switches having respective feelers extending through a wall of said hollow beam and said struts having recesses on a side thereof facing said feelers, said feelers engaging said recesses and acting on said switches in response to a depth of said recesses, so that manufacturing inaccuracies and play between said struts and said hollow beams are without influence, with said respective feelers of a corresponding one of said switches comprising a leveling feeler and a switch feeler that are mounted slidably on said corresponding switch and are movable independent of each other in relation to said hollow beam and said struts.

5,192,103

AUTOMOTIVE DOOR LOCK DEVICE

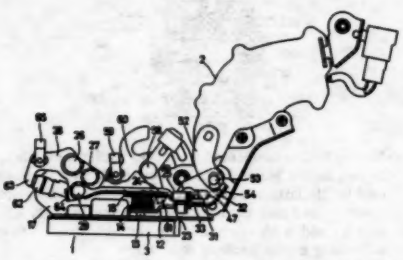
Ryoichi Fukumoto, Nagoya; Shigeru Hayakawa, Chiryu, and Nozomu Torii, Hekinan, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 28, 1989, Ser. No. 413,532

Claims priority, application Japan, Sep. 30, 1988, 63-244525

Int. Cl.[5] E05C *3/26*

U.S. Cl. 292—216 **5 Claims**



1. An automotive door lock device comprising:

a latch pin;

a latch striker having a pawl portion rotatably mounted on the latch pin;

a pawl pin spaced from and substantially parallel to the latch pin;

a pawl member, having a meshing surface, rotatably mounted on the pawl pin; the pawl member being rotatably urged into meshing engagement with the latch striker, the pawl portion of the latch striker being rotatably fixed in the locked position by the meshing surface of the pawl member, the latch striker being rotatably urged to the unlocked position upon rotation of the pawl member out of meshing engagement;

a lift lever, having an edge surface, mounted on the pawl pin and rotatable with the pawl member, said lift lever being rotatable to release the meshing surface of the pawl member from engagement with the latch striker;

an outer lever rotatably mounted on the pawl pin, the outer lever having an extension extending substantially radially from the pawl pin;

a release bushing, mounted on the extension of the outer lever, slidable radially on and disposed in an engagable position with the edge surface of the lift lever; and

a locking link having a guide portion with an arcuate slot extending substantially concentric with the pawl pin for guiding the release bushing into engagement with the edge surface of the lift lever for rotating the lift and pawl member to the position effective to release the meshing surface of the pawl member from the pawl portion of the latch striker.

5,192,104

ELONGATED CLAMP

Chin-Liang Lin, No. 55,, Chia-Tung Chino, Chia Fang Li, Hsin-Ying Hsih, Tainan Hsien, Taiwan

Filed May 29, 1992, Ser. No. 890,074

Int. Cl.[5] B25J *1/00*

U.S. Cl. 294—19.1 **1 Claim**

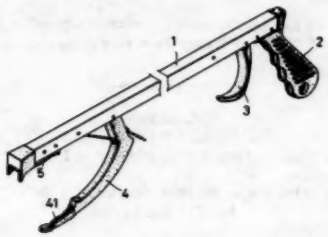
1. An elongated clamp for releasably gripping an object comprising:

(a) a hollow elongated housing defining opposing first and second end sections, said hollow elongated housing having a top wall and a pair of opposing sidewalls;

(b) a grip member fixedly secured to said first end section of said housing;

(c) a C-shaped trigger member positioned adjacent said grip member, said trigger member being pivotally secured to said opposing sidewalls of said housing within an interior of said hollow elongated housing, said trigger member having one end coupled to a first end of a rope member;

(d) a substantially L-shaped arm member pivotally secured to said opposing sidewalls adjacent said second end section of said hollow elongated housing, said L-shaped arm member defining a first arm and a second arm, said first arm having a through opening for inserting therethrough a second end of said rope member secured to said first arm by a hook member, said first arm being rotatable about a pin member secured to said opposing housing sidewalls, said second arm having at least a portion thereof forming a serrated surface for contacting said object;



(e) an elastic support block member fixedly secured to said second end section of said housing and at least partially mounted within said hollow elongated housing, said support block member having an inner surface being at least partially serrated for contacting said object;

(f) a pair of rotatable pulley members rotatably secured to said opposing sidewalls of said housing adjacent respectively said first and second end sections of said housing, said rope member passing contiguous said pulley members for coupling said C-shaped trigger member and said L-shaped arm member in a responsive displacement coupling; and,

(g) a torsion spring being rotatably mounted substantially interior of said housing on said pin member and having a first end contiguous said top wall of said housing and a second end contiguous an end of said first arm of said L-shaped arm member for biasing said second arm and said support block member in a displaced manner each from the other.

5,192,105

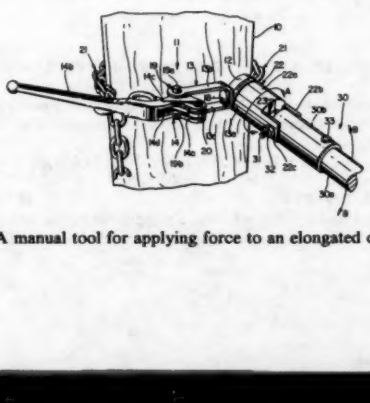
POLE HANDLER

G. Glenn Walker, 113 Greenbriar Rd., Gadsden, Ala. 35901

Filed Jan. 28, 1992, Ser. No. 826,852

Int. Cl.[5] B25J *1/02*

U.S. Cl. 294—19.1 **16 Claims**



1. A manual tool for applying force to an elongated object with spaced-apart ends along its longitudinal axis, such as a pole, which comprises:

(a) means for tightly gripping said object around its perimeter between the ends thereof;

(b) swivel means pivotally connected to said gripping means so that said swivel means can rotate at least 180 degrees about an axis of said swivel means which is approximately perpendicular to the longitudinal axis of said object; and

(c) elongated handle means pivotally connected at one end thereof to said swivel means so that said handle means can rotate at least 180 degrees about a transverse axis of said handle means, which handle axis is also transverse to and intersects said swivel means axis.

5,192,106

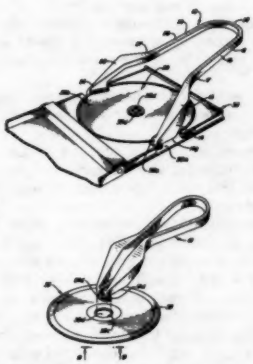
COMPACT DISC HANDLING DEVICE

Craig A. Kaufman, Studio City, Calif., assignor to L.A.F. Enterprises, Inc., Beverly Hills, Calif.

Continuation of Ser. No. 534,027, Jun. 4, 1990, abandoned. This application Mar. 24, 1992, Ser. No. 858,426

Int. Cl.[5] B25B *9/02*

U.S. Cl. 294—99.2 **17 Claims**



1. A device for handling a disc having an aperture, the disc having an outer edge and an inner edge, each edge of a given thickness, the inner edge defining the aperture, the device including:

a first flexible arm having a free end;

a second flexible arm attached to the first flexible arm and having a free end; and

receiving means, attached to the free end of the first and second flexible arms, for selectively receiving and encompassing one of the outer edge of the disc and the inner edge defining the aperture of the disc, wherein said receiving means comprises, in said free end of each said flexible arm, first and second grooves which are substantially parallel to one another, said first groove being oriented to encompass the outer edge of the disc and said second groove being oriented to encompass the inner edge of the disc, and said receiving means are dimensioned to both fit into the disc aperture.

5,192,107

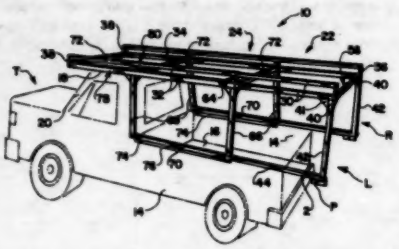
TELESCOPIC TRUCK RACK

Delbert L. Smith, Sr., P.O. Box 249, Salem, N. Mex. 87941

Continuation-in-part of Ser. No. 705,703, May 6, 1991, which is a continuation-in-part of Ser. No. 482,824, Feb. 21, 1990, abandoned. This application Jun. 24, 1992, Ser. No. 903,332

Int. Cl.[5] B60P *3/00*

U.S. Cl. 293—3 8 Claims



1. An adjustable truck rack assembly supported upon the side walls of a truck bed comprising;

a front section including pairs of substantially parallel and vertically spaced apart upper and lower side rails with each said pair defining the forward portion of a frame side unit,

forward and rearward uprights having opposite ends connecting each said upper and lower side rails of each said side unit,

fittings on each said side unit removably receiving said uprights,

adjustable transverse brace members spanning said frame side units between said upper side rails,

a rear section including pairs of substantially parallel and vertically spaced apart upper and lower side rails with each said pair defining the rearward portion of a frame side unit,

a pair of rearmost uprights having opposite ends connecting each said rear section upper and lower side rails of each said side unit,

fittings on each said frame side unit of said rear section removably receiving said rearmost uprights,

an adjustable transverse brace member spanning said rear section side units,

said rails comprising tubular member; means for attaching said front section to said side walls; said front and rear section rails telescopically interfitting substantially along the entire length of said side rails of said rear section; means for repositioning said rear section an amount sufficient to overhang the rear of the truck bed in a fully extended position and to extend rearwardly over a portion of the truck bed in a fully telescoped position while said front section is attached to said side walls, and

said upper rails of both frame side units projecting forwardly of said forward uprights to define an extended top rack portion adapted to overlie a truck cab, wherein;

said frame side units are inclined inwardly toward one another at their tops.

5,192,108

PROTECTIVE EQUIPMENT COMPARTMENT FOR TRUCKS

Donald A. Richardson, and James E. Schatzer, both of Renton, Wash., assignors to Paccar Inc., Bellevue, Wash.

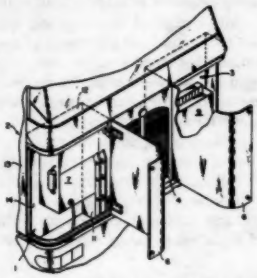
Filed Jan. 8, 1992, Ser. No. 818,167

Int. Cl.[5] B60R *11/00*

U.S. Cl. 296—37.1 14 Claims

1. An apparatus for closing an equipment compartment located adjacent the front of a vehicle cab, comprising:

a corner panel forming part of the exterior of the vehicle cab, said corner panel adapted for use with the equipment compartment and having a generally flat forward surface and a generally flat side surface combined at an angular curved corner; and



means for pivotally attaching said corner panel to the vehicle cab and for swinging the corner panel about a vertical axis.

5,192,109

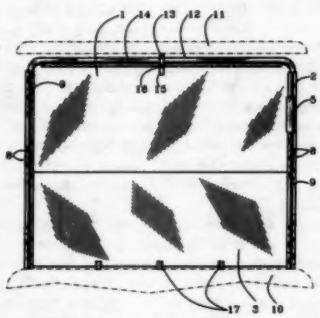
GOLF CART WINDSHIELD

Marc W. Roberts, Tampa, Fla., assignor to Larry W. Carroll, Tampa, Fla.

Filed Apr. 28, 1992, Ser. No. 875,690

Int. Cl.[5] B60J *1/06*

U.S. Cl. 296—84.1 31 Claims



1. A dual windshield having:

a bottom panel attachable to a side windshield column at each side of the bottom panel;

a top panel slidable up-and-down in a channel having walls attachable to a side column at each side of the top panel;

an inwardly-projecting handle on a top of the top panel; and

a panel latch attachable to a frame member at a top of the windshield;

the panel latch being snap-latchable onto the inwardly-projecting handle with the top panel in a raised position.

5,192,110

SUNSHADE AND VANITY MIRROR SYSTEM FOR A MOTOR VEHICLE

William Mykytiuk, Taylor, and Abdi Lawassani, Pontiac, both of Mich., assignors to United Technologies Automotive, Dearborn, Mich.

Filed Aug. 30, 1991, Ser. No. 752,408

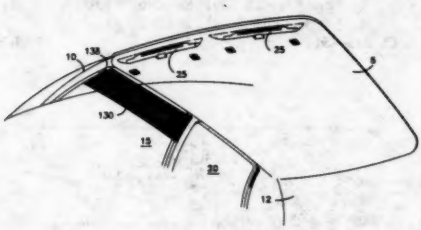
Int. Cl.[5] B60J *3/02*

U.S. Cl. 296—97.8 15 Claims

1. In a motor vehicle having a windshielded, the interior of said vehicle having a headliner covering the inner surface of

the motor vehicle's roof, and a vanity mirror being selectively positionable from a stored position to an operating position from which an occupant of the vehicle may view himself or herself and a visor panel for selectively shading said occupant from light entering said vehicle through said windshield, the improvement characterized by:

said visor panel being selectively positionable from a stored position thereof between said headliner and roof, to an operating position thereof between the occupant of the vehicle and the windshield to provide said shading;



said stored position of said vanity mirror comprising a concealed location between said headliner and said roof;

said vanity mirror being mounted on said visor panel and independently deployable with respect thereto, to said operating position of said mirror while said visor panel remains in said stored position thereof; and

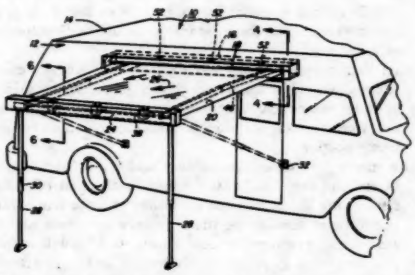
means disposed between said headliner and said roof on which said vanity mirror is mounted for guiding movement of said vanity mirror and visor panel between said stored positions between said roof and said headliner and said operating positions.

5,192,111

BUILT-IN AWNING FOR RECREATIONAL VEHICLE

Jacobus N. Hanemaayer, Kitchener, Canada, assignor to Hanmar Motor Corporation, Kitchener, Canada

Filed Mar. 3, 1992, Ser. No. 845,380
Claims priority, application Canada, Oct. 30, 1991, 2054531
Int. Cl.[5] B60P *3/34*
U.S. Cl. 296—163 **19 Claims**



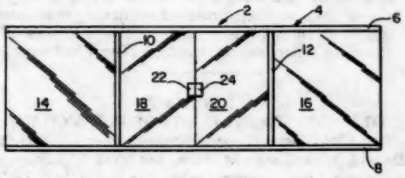
1. A recreational vehicle comprising a vehicle body including opposed sidewalls, and wherein one of said sidewalls includes, in an upper region thereof, an elongated recess having an elongated mouth which opens to the exterior of said body, said recess extending in the fore and aft direction of said body, an elongated reel extending longitudinally within said recess and mounted for rotation therein about the longitudinal axis of said reel, said reel carrying a length of awning material thereon, means for rotating said reel to effect wrapping or unwrapping of said awning material thereon or therefrom to permit said awning material to be retracted into said recess or to be extended outwardly of said recess beyond said one sidewall of the body, and a door for closing said mouth of said recess when said awning material has been fully retracted into said recess.

5,192,112

SAFETY CAPTAIN WINDOW FOR TRUCKS

Nicholas Gherardi, 185-1 Black River Rd., Long Valley, N.J. 07853, and Sarl Steller, R.D. 1 Box 390-3, Upper Black Eddy, Pa. 18972-9605

Filed Jan. 7, 1992, Ser. No. 817,504
Int. Cl.[5] B62D *33/06*; E06B *3/00*
U.S. Cl. 296—190 **9 Claims**



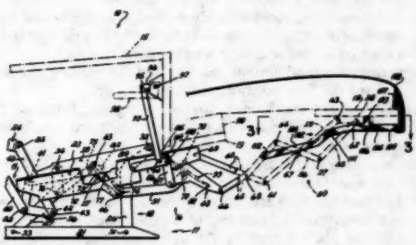
1. A safety captain window for a truck, which comprises: a captain window housing comprising inner, middle, and outer channel member of same channel width, wherein said inner channel member comprises at least one slidable glass window member slidably movable within said inner channel member, said middle channel member comprises first and second fixed glass plate members fixedly mounted within said middle channel member so as to define an opening therein between said first and second fixed glass plate members, and said outer channel member comprises first and second immovable channel sections wherein said inner, middle or outer channel members is separated by a safety screen means, whereby said safety screen means prevents the influx of solid matter through an opening formed when said at least on slidable glass window member is moved in a lateral direction within said inner channel member.

5,192,113

UPHOLSTERY TENSION ADJUSTMENT LINKAGE MECHANISM

Glenn N. Wiecek, Shelbyville, Ky., assignor to Leggett & Platt, Incorporated, Carthage, Mo.

Filed Aug. 27, 1990, Ser. No. 573,468
Int. Cl.[5] A47C *1/02*
U.S. Cl. 297—85 **20 Claims**



1. A recliner chair comprising

a base,

a seat and backrest,

a footrest having an inner side edge and an outer side edge,

seat and backrest linkage means including a seat link mounting said seat to said base for movement of said seat and backrest between upright and reclined positions, and linkage means being operable to change the inclination of

said seat in the course of movement between upright and reclined positions,

footrest linkage means mounting said footrest to said seat, said footrest linkage means being operable to move said footrest between retracted and extended positions, said retracted position disposing said footrest generally vertically and with the inner side edge located adjacent to said seat, said extended position disposing said footrest generally horizontally and with said inner side edge spaced substantially forward of said seat,

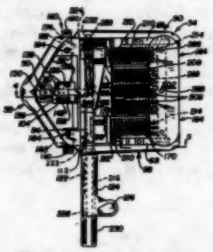
upholstery tension adjustment linkage means, and

a layer of upholstery overlying and fixed to said seat, said upholstery extending continuously to, over, and around said footrest and being connected to said upholstery tension adjustment linkage means for adjusting movement of said layer of upholstery relative to said footrest in response to extension and retraction of said footrest.

5,192,114
TILT ADJUSTMENT CONTROL FOR A CHAIR

Geoffrey A. Hollington, London, England; Robert A. Nagelkirk, Zeeland, Mich.; Lynne M. Allen, and Mark E. Kuyper, both of Holland, Mich., assignors to Herman Miller, Inc., Zeeland, Mich.

Division of Ser. No. 317,582, Mar. 1, 1989. This application Mar. 8, 1991, Ser. No. 666,881
Int. Cl.[5] A47C *1/032*
U.S. Cl. 297—304 **33 Claims**



1. A chair having a seat, a back and a base, said seat and back each being pivotally mounted to the base and the seat and back further being pivotally connected to each other so that the back and seat move synchronously and the back pivots at a rate proportional to the seat as one of the seat and back is pivoted,

a tilt mechanism between the base and the seat for controlling said synchronous movement, the tilt mechanism comprising a stationary housing mounted to the base, said housing having opposed top and bottom walls,

a seat support member slidably mounted to the housing for movement between fore and aft positions, said seat being mounted to the seat support member,

a spring mounted within the housing for biasing the seat toward the fore position, and

an adjustment mechanism for adjusting the force of the spring, wherein the spring force, adjustment mechanism comprises:

an actuating rod journaled to the housing for rotation relative thereto and having a portion thereof within the housing and an outward portion thereof extending laterally outwardly of the housing to a point approximately in a vertical plane extending through a side edge of the seat,

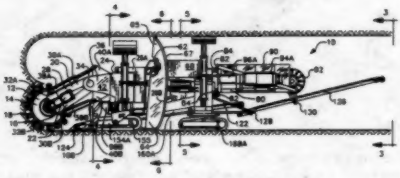
a wedge mounted to the rod within the housing and positioned between said top and bottom walls for movement along the rod in response to rotation of the rod, said bottom and top walls interfering with rotation of the wedge upon rotation of the rod to effect linear movement of the wedge along the rod, and

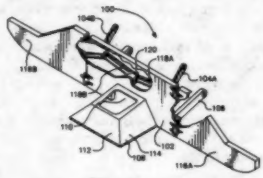
a carriage disposed within the housing in engagement with the wedge for movement in a direction transverse to the axis of the rod, the spring being mounted between the carriage and the seat support member to resist movement of the seat support member toward the aft position as the spring is compressed and the force of the spring resistance being adjustable by rotation of the rod.

5,192,115
TRAMMING MOBILE MINING MACHINE

Thomas M. Hartman, Des Moines, Wash., and David B. Sugden, Tasmania, Australia, assignors to The Robbins Company, Kent, Wash.

Filed May 28, 1991, Ser. No. 706,052
Int. Cl.[5] E21C *29/22, 35/20*
U.S. Cl. 299—31 **19 Claims**





12. A holding apparatus for mobile mining machine having a front crawler means, a rear crawler means, and a front frame portion and a rear frame portion interconnected by thrust means and adapted to reciprocate axially with respect to each other, said holding apparatus comprising:

fixed front support means having front support pad means adapted to anchor against the tunnel floor and front gripper cylinder means adapted to anchor against the tunnel wall, said fixed front support means being mounted on the front frame portion to move on an axis longitudinal of said mobile mining machine for movement of said fixed front support means and the front frame portion with respect to each other;

fixed rear support means having rear support pad means adapted to anchor against the tunnel floor and rear gripper cylinder means adapted to anchor against the tunnel wall, said fixed rear support means fixedly mounted on the rear frame portion;

attachment link means connecting said fixed front support means and said fixed rear support means; and lift means connecting the front crawler means and the front frame portion and connecting the rear crawler means and the rear frame portion for configuring said mobile mining machine in a gripping configuration and a re-gripping configuration.

16. A muck apron assembly for a mobile mining machine comprising:

a substantially planar center section adapted to be oriented on the mobile mining machine such that said substantially planar center section is substantially parallel to a tunnel work face;

a hopper on said center section having a conveyor feed opening adapted to communicate with muck conveyor means;

substantially planar wing sections pivotally attached to ends of said center section;

wing section swing cylinder means for pivotal movement of

said wing sections between a substantially planar orientation with said center section and a tunnel work face and a substantially perpendicular orientation to said center section and a tunnel work face; and

much apron lift cylinder means connecting for lift-up and lowering said much apron assembly relative to the mobile mining machine.

5,192,116

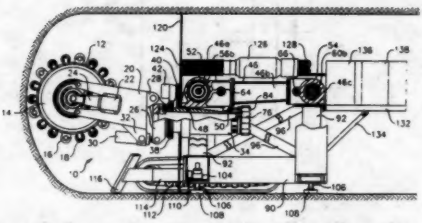
GANTRY-TYPE MOBILE MINING MACHINE

John Turner, Renton, and Neil J. Dahmen, Seattle, both of Wash., assignors to The Robbins Company, Kent, Wash.

Filed May 28, 1991, Ser. No. 706,402

Int. Cl.[5] E21C *29/26, 31/08*

U.S. Cl. 299—75 **19 Claims**



17. In a mobile mining machine having a frame and of the type wherein a cutterwheel is mounted for pivotal movement on boom means and rotated about an axis substantially parallel to the tunnel work face while being swept progressively across the tunnel work face, the improvement wherein said boom means is carried by mounting means enabling pivotal movement of said boom means about an axis generally parallel to said work face and said mounting means is in turn supported by rotatable means rotatable about an axis generally perpendicular to the tunnel work face so that the axis of rotation of the cutterwheel is positionable in any desired direction generally parallel to the work face and means mounted on said frame for causing traverse movement of said cutterwheel and said boom means relative to said frame.

5,192,117

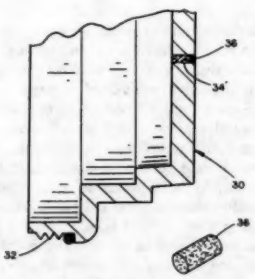
HUBCAP WITH VENT

Gary L. Kuck, 692 W. Lakeshore, Lincoln, Nebr. 68525

Filed Jan. 13, 1992, Ser. No. 820,152

Int. Cl.[5] B60B *7/00*

U.S. Cl. 301—108.1 **2 Claims**



1. A hubcap for a wheel comprising,

a generally cup-shaped member adapted to be secured to a wheel to prevent contaminants from entering the wheel bearings of the wheel,

said cup-shaped member having a vent opening formed therein,

and a plug means comprised of a bronze powder material cast into a cylindrical shape and press-fitted into said vent opening which permits the continuous passage of air therethrough to vent the wheel bearings but which prevents the passage of water and other contaminants therethrough.

5,192,118

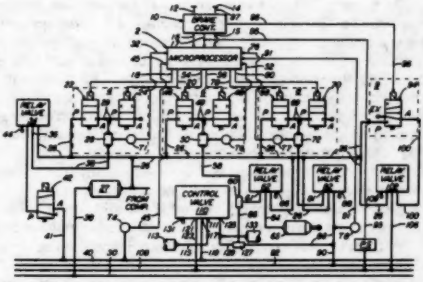
ELECTRO-PNEUMATIC LOCOMOTIVE BRAKE CONTROL SYSTEM

Richard F. Balukin; John B. Newingham, both of Pittsburgh, and Frank J. Jerina, Irwin, all of Pa., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Jun. 6, 1991, Ser. No. 710,849

Int. Cl.[5] B60T *15/14*

U.S. Cl. 303—15 **15 Claims**



1. An electro-pneumatic brake control system for a railway train having a brake pipe normally charged to a certain chosen pressure comprising:

(a) a brake controller having a first handle including means for generating an automatic brake command signal in accordance with a selected position of said first handle;

(b) a first brake control circuit having first electro-pneumatic valve means for controlling the pressure of said brake pipe;

(c) a second brake control circuit having second electro-pneumatic valve means for controlling the brake pressure of a locomotive of said railway train;

(d) microprocessor means for controlling said first electro-pneumatic valve means in accordance with said automatic brake command signal, and for controlling said second electro-pneumatic valve means in accordance with a change of said brake pipe pressure;

(e) pneumatic back-up control means operative in response to variation of said brake pipe pressure for controlling the brake pressure of said locomotive in parallel with said second electro-pneumatic valve means, said variation of said brake pipe pressure in a negative sense effecting application of the locomotive brakes; and

(f) said first electro-pneumatic valve means being arranged to effect said variation of said brake pipe pressure in said negative sense in a deenergized condition thereof, and said second electro-pneumatic valve means being arranged to effect a release of said locomotive brake pressure in a de-energized condition thereof.

5,192,119

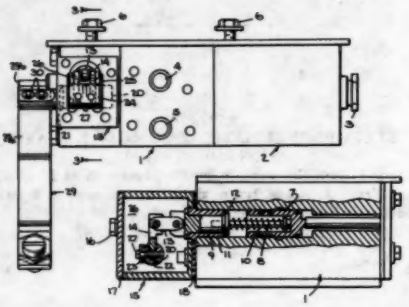
PROTECTIVE COVER FOR EMPLY/LOAD VALVE ACTUATOR

Robert Shepherd, Hamburg, and Neal Dauber, Hopatcong, both of N.J., assignors to Ellcon National, Inc., Greenville, S.C.

Continuation-in-part of Ser. No. 452,279, Dec. 15, 1989, Pat. No. 5,039,174. This application Oct. 30, 1990, Ser. No. 605,681

Int. Cl.[5] B60T *8/22*

U.S. Cl. 303—22.8 **7 Claims**



1. In an empty/load valve having a housing, said housing comprising a first air port for receiving air under pressure above atmospheric pressure and a second air port outlet for supplying air to a brake cylinder, air received at said first air port being supplied to said second air port outlet, a control valve within said housing for controlling the pressure of the air supplied to said second air port outlet and control means mounted on the within said housing for operating said control valve, the improvement comprising:

a rigid cover mounted on said housing in dust-free relation thereto, said cover overlying said control means;

a pivotable shaft pivotally mounted on said cover with at least a first portion thereof within said cover and a second portion thereof externally of said cover and having a pivot axis;

a relatively long and narrow load measuring arm mounted on said second portion of said shaft externally of said cover and with its length extending transversely to said pivot axis; and

interconnecting means within said cover and interconnecting said shaft and said control means for causing movement of said control means with pivoting of said shaft, said interconnecting means comprising a linkage pivotally secured to said shaft and said control means whereby movement of said control means in either of two directions causes pivoting of said shaft.

5,192,120

BRAKE PRESSURE CONTROL SYSTEM WITH AN ELECTRICAL MOTOR OPERATING A PUMP AND CONTROL VALVE

Hans-Dieter Reinartz, Frankfurt am Main; Peter Volz, Darmstadt; Erhard Beck, Weilburg, and Andre F. L. Goossens, Rumst, all of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

PCT No. PCT/EP91/00485, § 371 Date Feb. 19, 1992, § 102(e) Date Feb. 19, 1992, PCT Pub. No. WO91/18775, PCT Pub. Date Dec. 12, 1991

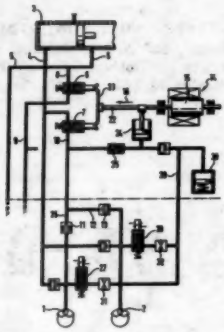
PCT Filed Mar. 14, 1991, Ser. No. 809,534

Claims priority, application Fed. Rep. of Germany, May 25, 1990, 4016745

Int. Cl.[5] B60T *8/34*

U.S. Cl. 303—113.2 **13 Claims**

1. A brake pressure control system, in particular for automotive vehicles having wheel brakes, with at least one of an antilocking locking control system (ABS) and a traction slip control system (TSS), which operates with hydraulic fluid pressure, being comprised of a master cylinder, at least one wheel cylinder for each of said wheel brakes, a pressure modulator comprising a plurality of control valves actuatable for the modulation of the hydraulic pressure in said at least one wheel cylinder of the wheel brakes during a brake pressure control mode for each, at least one electric motor having a rotor, and



a pump driven by said rotor of said motor for the generation of a fluid pressure,

at least a part of said rotor of said motor including an axially movable thrust member axially moved upon energization of said motor, said thrust member actuating at least one of said control valves of said pressure modulator by said movement thereof.

5,192,121

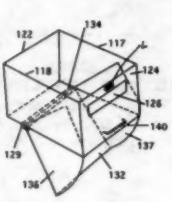
TRASH ORGANIZER FOR RECYCLING

Mark Stutler, Rte. 3, Box 150E, Hurricane, W. Va. 25526

Continuation-in-part of Ser. No. 669,087, Mar. 15, 1991. This application Sep. 13, 1991, Ser. No. 759,546

Int. Cl.[5] B65F *1/12*

U.S. Cl. 312—212 **10 Claims**



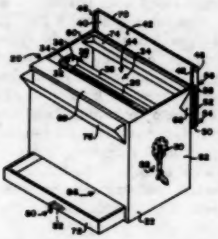
1. A trash collection and sorting system having a vertically extending main housing having left and right sidewalls and a plurality of individual vertically stacked storage volumes in said main housing, said individual storage volumes being adapted to receive a particular category of trash, a lower one of said storage volumes being for miscellaneous trash and an upper one of said storage volumes being for flat paper articles, said upper one of said storage volumes including a drawer having side, rear and front panels secured together, a slot in said front panel for receiving said flat paper articles, guide rails supporting said drawer in said housing, and a bottom panel, said bottom panel having an inner short portion secured to lower edges of said side and rear panels and having a forward edge, and a longer front portion having means for hingedly securing said front portion to said forward edge of said short portion, said longer front portion having a length such that the center of gravity of paper stored in said rear is over said longer front portion.

5,192,122

CARROUSEL TOOL BOX WITH LOCKING CRANK

Leroy Hill, Rte. 2, Box 57-A, Smithville, Ark. 72466

Filed Nov. 4, 1991, Ser. No. 787,417
Int. Cl.[5] A47B *49/00*
U.S. Cl. 312—267 6 Claims



1. An improved carrousel tool box having a cabinet, a carrousel of trays mounted for rotation about an axis within the cabinet, and a shaft attached to the carrousel of trays along the axis of rotation of the carrousel of trays and extending outwardly through the cabinet, wherein the improvement comprises a locking crank means for turning the shaft, thereby rotating the carrousel of trays, and for locking the shaft from turning, said crank means comprising:

(a) an arm attached to the shaft and extending radially outward therefrom, said arm having a proximate end adjacent the shaft and having a remote end distant from the shaft;

(b) a handle pivotally mounted to said remote end for movement in a radial plane of the shaft, said handle having a cranking position and a locking position;

(c) a fulcrum attached to said arm between said remote and proximate ends;

(d) locking means for allowing and preventing the turning of the shaft; and

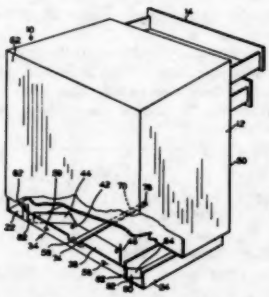
(e) lever means pivoted on said fulcrum and operated by said handle for causing said locking means to prevent the turning of the shaft when said handle is in said locking position, and for causing said locking means to allow the turning of the shaft when said handle is in said cranking position.

5,192,123

FLOOR ANCHOR FOR A CABINET

Robert M. Wallin, Aurora, Ill., assignor to Aurora Equipment Co., d/b/a Equipto, Aurora, Ill.

Filed Nov. 5, 1990, Ser. No. 610,381
Int. Cl.[5] A47B *96/00*
U.S. Cl. 312—351.7 19 Claims



1. A floor anchor assembly for securing a cabinet to a grade comprising:

a cabinet having a floor portion at a back end of the cabinet;

a base plate secured to grade;

a first prong and a second prong each mounted to said base plate and arranged to provide a clearance between a bottom of said prongs and grade and said base plate shaped so said cabinet si slidable over said base plate with said floor portion slidable beneath said prongs, said prongs overlying said floor portion, preventing said floor portion from lifting;

a back wall mounted to said base plate and extending a width of said base plate and terminating laterally outwardly of said base plate in said first prong at one end and in said second prong at an opposite end, said prongs turned angularly toward a front of said cabinet; and

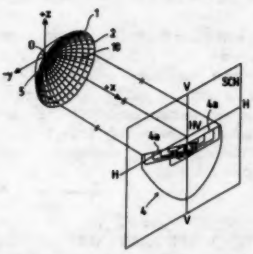
wherein said floor portion comprises bottom portions of a back end of laterally arranged fork lift channels for receiving the tines of a fork lift.

5,192,124

REFLECTOR FOR VEHICLE HEADLIGHT

Hiroshi Kawashima; Takao Watanabe, and Akira Miura, all of Shizuoka, Japan, assignors to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Oct. 29, 1991, Ser. No. 783,992
Claims priority, application Japan, Jan. 23, 1991, 3-021430
Int. Cl.[5] B60Q *1/04*
U.S. Cl. 362—61 20 Claims



1. A headlight for a vehicle comprising;

a light source comprising a filament, and having a central axis defining a direction of light radiation; and

a reflector comprising a plurality of reflector regions, each region being defined by a first surface having an optical axis, each said optical axis being identical with said central axis, said first surface being shaped by adjusting configurational parameters and applying vector control to produce a second surface which projects a filament image having a longitudinal central axis and a periphery along a cutline, th longitudinal central axes of all said filament images being coincident with one another.

5,192,125

APPARATUS FOR ILLUMINATING A VEHICLE LICENSE PLATE AND METHOD OF USING SAME

Jaime D. Gonzalez, 9390 Suva St., Downey, Calif. 90240

Continuation of Ser. No. 741,784, Aug. 6, 1991, Pat. No. 5,150,961. This application Feb. 21, 1992, Ser. No. 839,814
The portion of the term of this patent subsequent to Sep. 29, 2009, has been disclaimed.
Int. Cl.[5] B60Q *1/56*
U.S. Cl. 362—83.2 13 Claims

1. An illuminating apparatus for use with an electrical system of a motor vehicle, comprising:

tube means for providing a source of bright glowing light, said tube means having a set of spaced apart electrodes;

low-voltage high-frequency power means coupled to the electrical system of the motor vehicle for producing low-voltage high-frequency power;

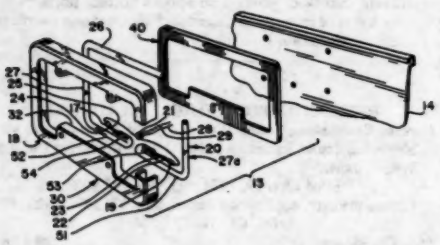
small-sized high-voltage high-frequency transformer means

responsive to said low-voltage high-frequency power means for producing high-voltage electrical power to energize said tube means;

low-voltage conductor means for coupling said high-voltage high-frequency transformer means to said low-voltage high-frequency power means;

high-voltage conductor means for coupling said high-voltage high-frequency transformer means to said electrodes of said tube means;

tube holder means for receiving and supporting said tube means in a stationary manner relative to the motor vehicle;



means defining a small space for receiving said high-voltage high-frequency transformer means within said tube holder means

means for mounting said tube holder means to the motor vehicle; and

non-conductive protective cover means for insulating said tube means and said high-voltage high-frequency transformer means within said tube holder means to from the motor vehicle substantially prevent an electrical short circuit between said high voltage transformer means and the motor vehicle.

5,192,126

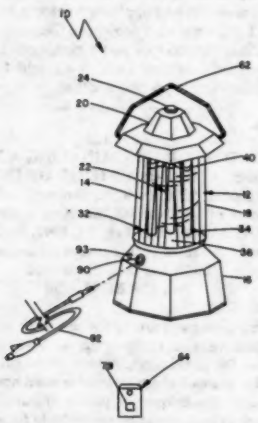
REMOTE CONTROL FLUORESCENT LANTERN

Steven C. Remeyer, Mission Viejo, and Rudy B. Meoli, Jr., Placentia, both of Calif., assignors to E-Z Sales and Manufacturing, Inc., Gardena, Calif.

Filed Aug. 1, 1991, Ser. No. 738,883

Int. Cl.[5] F21L *3/00, 7/00*; F21Y *23/00*

U.S. Cl. 362—184 **24 Claims**



1. A portable fluorescent lantern, comprising:

a globe;

a top member mounted on a top portion of said globe;

a base for supporting said globe and said top, said globe mounted on said base;

means for detachably securing said base, said globe and said top together;

a fluorescent light mounted within said globe;

a bracket secured to said means for detachably securing, said bracket dimensioned and positioned so that a portion thereof is adjacent a generally medial portion of said fluorescent light when said light is operationally positioned within said globe in order to facilitate operational positioning of said fluorescent light within said globe and to retain said fluorescent light in its operational position within said globe by providing lateral support thereto;

an upper electrical contact means mounted in said top member for connecting an electric circuit to an upper end of said fluorescent light;

a lower electrical contact means mounted in said base for connecting an electric circuit to a lower end of said fluorescent light.

5,192,127

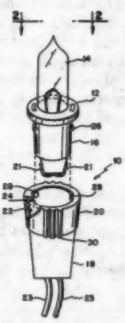
TWO-PIECE LOCKING LAMP FIXTURE

Irving W. Schaef, Hialeah, Fla., assignor to GKI, Miami, Fla.

Filed Feb. 14, 1992, Ser. No. 835,796

Int. Cl.[5] H01R *33/00*

U.S. Cl. 362—226 **21 Claims**



1. A locking lamp fixture comprising

a lamp base for containing a light bulb;

a socket for holding said lamp base;

said lamp base cooperatively dimensioned and configured to fit within said socket such that there is a spaced distance between said lamp base and said socket

latch means on said lamp base for extending across said spaced distance toward said socket;

catch means on said socket for extending across said spaced distance for mating engagement with said latch means on said lamp base; and

disconnection means capable of reshaping said spaced distance, whenever a sufficient force is applied to said disconnection means, to permit said catch means to disengage from said latch means to terminate said mating engagement thereof.

5,192,128

LENSED LUMINAIRE WITH LENS BRIGHTNESS CONTROL AND METHOD

Peter Y. Y. Ngai, Danville, Calif., assignor to Peerless Lighting Corporation, Berkeley, Calif.

Filed Jun. 4, 1991, Ser. No. 709,838

Int. Cl.[5] F21V *5/02, 7/00*

U.S. Cl. 362—297 **34 Claims**

1. A luminaire comprising

a housing,

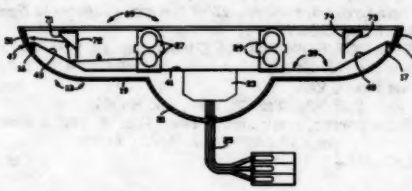
a light source associated with said housing,

a light transmissive element mounted in relation to said housing for receiving light from said light source and for transmitting at least a portion of said light into normal viewing angles such that, when the luminaire is observed at such normal viewing angles, said light transmissive element acts as a source of observable brightness,

reflector means disposed in said housing between said light source and said light transmissive element for reflecting source light along an indirect light path to said light transmissive element for inducing observable brightness in said light transmissive element, and

means along said indirect light path for producing a substantially specular reflection from said reflector means so that said light transmissive element receives substantially source light,

means for shielding said light transmissive element from direct illumination by said light source such that the observable brightness of the light transmissive element is determined substantially entirely by indirect source light.



5,192,129

CUSTOMIZED LIGHT REFLECTOR

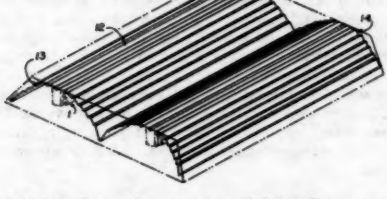
Luisito A. Figueroa, c/o Excel Products Products, Inc., Suite 504, Jovan Condominium, 600 Shaw Blvd., Mandaluyong, Metro Manila, Philippines

Continuation-in-part of Ser. No. 624,605, Dec. 10, 1990, Pat. No. 5,062,030. This application Sep. 6, 1991, Ser. No. 756,076

The portion of the term of this patent subsequent to Oct. 29, 2008, has been disclaimed.

Int. Cl.[5] F21V *7/12*

U.S. Cl. 362—346 **6 Claims**



1. A light reflector for use with a lighting fixture concave disposed in a direction parallel to an elongated light source, said reflector comprising:

a central section, said central section having at least a substantial part of its surface disposed in a horizontal plane to reflect light from said source downwardly said central section being intersected by at least one pair of opposed, longitudinally extending ridges, the sums of the widths of said ridges being substantially less than the part of said central section disposed in said horizontal plane; and

a pair of substantially arcuate wing sections, each of said wing sections being symmetrically positioned on one side of said central section opposite the other wing section and parallel to said central section, said wing sections being connected to said central section to form a substantially concave shape and comprising a plurality of individually dimensioned and oriented light reflective portions, each said portion comprising a first surface and a second surface, said first surface extending downwardly-outwardly relative to a horizontal plane, and said second surface extending outwardly-upwardly from the lower edge of its corresponding first surface, said first surface being substantially greater in length than its corresponding second surface.

5,192,130

METHOD FOR PRODUCING AN EMULSION AND AN APPARATUS THEREFOR

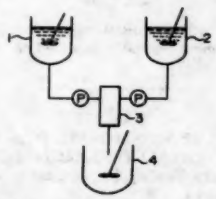
Kiyoshi Endo, and Masami Ishikura, both of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Mar. 5, 1991, Ser. No. 664,787

Claims priority, application Japan, Mar. 6, 1990, 2-54249

Int. Cl.[5] B01F *15/04*

U.S. Cl. 366—161 **11 Claims**



1. A process of making an emulsion for photographic material, comprising:

preparing a water phase solution in a first tank,

preparing an oil phase solution in a second tank,

premixing the water phase solution and the oil phase solution with an in-line mixer,

emulsifying said pre-mixed the water phase solution and the oil phase solution in an emulsification tank, said first tank being air-tightly connected to an inlet of the in-line mixer and the second tank being air-tightly connected to the inlet of the in-line mixer, and

an outlet of the in-line mixer being connected to the emulsification tank.

5,192,131

STIRRING DEVICE

Charlotte A. Hatfield, 3505 Porter St., Texarkana, Ark. 75502

Filed Jul. 8, 1992, Ser. No. 910,582

Int. Cl.[5] B01F *7/16*

U.S. Cl. 366—308 **4 Claims**

1. A stirring device, comprising,

an outer tubular sleeve slidably mounted within an inner sleeve, the outer tubular sleeve defined by a predetermined internal diameter, and the inner tubular sleeve defined by a predetermined outer diameter, wherein the predetermined outer diameter is substantially equal to the predetermined internal diameter, and

the outer tubular sleeve including an outer sleeve lower distal end spaced from an outer sleeve upper distal end, the inner sleeve including an inner sleeve lower distal end spaced from an inner sleeve upper distal end, and

the outer sleeve and the inner sleeve coaxially aligned relative to one another about a common axis, and

the inner sleeve including a first actuator link and a second actuator link mounted pivotally to the inner sleeve adjacent the inner sleeve upper distal end, wherein the first actuator link and the second actuator link effect coaxial

displacement of the inner sleeve relative to the outer sleeve, and

the inner sleeve lower distal end including a plurality of paddle members pivotally mounted to the inner sleeve lower distal end.

5,192,132

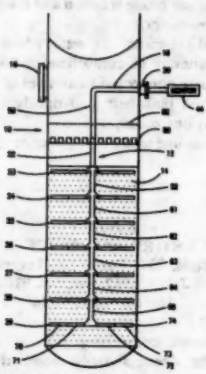
TEMPERATURE MONITORING OF A FIXED-BED CATALYTIC REACTOR

Martha T. Pelensky, Yardley, Pa., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 12, 1991, Ser. No. 808,794

Int. Cl.[5] G01K *07/06*; G01N *25/20*

U.S. Cl. 374—166 **16 Claims**



1. A system for monitoring temperatures in an elongated fixed-bed catalytic reactor having a diameter sufficiently large to accommodate personnel during catalyst loading and a manway to provide personnel access to the reactor for assembling a multi-level thermowell therein during catalyst loading, said system comprising:

a central thermal sensor conduit of said thermowell extending vertically within a bed of catalyst in said reactor;

a plurality of arrays of lateral thermal sensor conduits of said thermowell within the bed of catalyst and spaced along said central conduit, each one of said arrays being formed by its respective lateral conduits extending outwardly from said central conduit such that the bed of catalyst provides structural support for said thermowell;

at least one thermal sensor in each of said lateral conduits;

means outside of said reactor for monitoring said thermal sensors;

a thermowell inlet formed in said reactor; and

a plurality o thermal sensor leads connected to said thermal sensors and extending upwardly through said central conduit and out said thermowell inlet to said monitoring means.

5,192,133

FLEXIBLE CONTAINER WITH IMPROVED BOTTOM AND TOP

Anders Juel; Olaf Strand; Bjarne Omdal, all of Porsgrunn, and Roger Lysfjord, Stathelle, all of Norway, assignors to Norsk Hydro a.s., Oslo, Norway

PCT No. PCT/NO90/00039, § 371 Date Sep. 10, 1991, § 102(e) Date Sep. 10, 1991, PCT Pub. No. WO90/09929, PCT Pub. Date Sep. 7, 1990

PCT Filed Feb. 28, 1990, Ser. No. 752,559

Claims priority, application Norway, Feb. 28, 1989, 890860

Int. Cl.[5] B65D *30/04*, *30/20*, *33/10*

U.S. Cl. 383—7 **8 Claims**

1. A flexible intermediate bulk container for the transportation and storage of bulk material, said container comprising:

a hose shaped blank of woven material, said blank having a longitudinal axis, a top and a bottom;

said blank having formed therein at least two longitudinal folds extending parallel to said axis and defining at least three folded blank sections each including two layers of said woven material, with said at least three folded blank sections being superimposed, thus defining at least six superimposed layers of said woven material;

at least one of said top and said bottom of said blank having a seam extending transverse to said axis and formed by joining said at least six superimposed layers of woven material, said seam having a length in a direction transverse to said axis equal to less than one-quarter of the circumference of said hose shaped blank and therefore of said container; and

said top of said blank having therein a filling opening for filling bulk material into said container and having at least one lifting loop formed by at least one integral extension of the entire circumference of said blank of woven material.

5,192,134

RE-USABLE FLEXIBLE BULK CONTAINERS

Walter J. Polett, P.O. Box 55, Mount Holly, N.J. 08060

Filed Nov. 12, 1991, Ser. No. 790,488

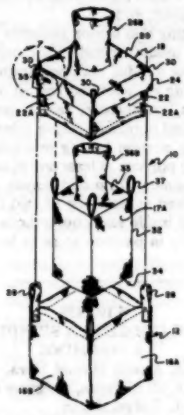
Int. Cl.[5] B65D *30/08*, *33/14*

U.S. Cl. 383—24 **13 Claims**

1. A flexible bulk container for handling and storage of flowable materials comprising in combination:

(a) a flexible and collapsible bulk bag bottom component having an encircling first side wall, a bottom end with an opening therethrough through which the contents are discharged connected to a lower portion of said first side wall and an open upper end opposite said bottom end; and

(b) a flexible and collapsible bulk bag top component having a top end, an encircling second side wall connected to said top end which is separably receivable within and generally complementary to the first side wall of said bag bottom component, said top component also having an open lower end opposite said top end, said lower end having an



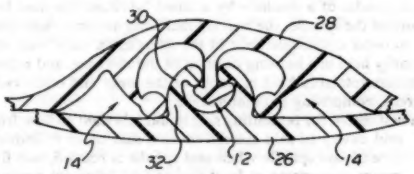
opening substantially equal in size to the outermost perimeter of said top component, said top and bottom ends and first and second side walls defining an interior storage space therebetween for flowable granular or powdered bulk material with the second side wall being adapted to be in firm engagement with said first side wall when said storage space is at least partially filled.

5,192,135

PROFILE AND ADJACENT RIB-TYPE CLOSURE ELEMENT FOR RECLOSABLE THERMOPLASTIC BAGS

Jamie M. Woods, Kawkawlin; Jose Porchia, and Brian C. Dais, both of Midland, all of Mich., assignors to Dowbrands L.P., Indianapolis, Ind.

Filed May 31, 1991, Ser. No. 708,411
Int. Cl.[5] B65D *33/24*
U.S. Cl. 383—63 **7 Claims**



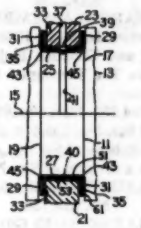
1. A closure member for a reclosable plastic bag, comprising:
a longitudinally-extending profile interlockable with an opposing longitudinally-extending profile of a second closure member; and
a longitudinally-extending rib located adjacent and generally parallel to the profile, the rib being characterized in cross-section by a lower generally triangularly-shaped portion and by an upper bulbous portion defined generally at an apex of the lower generally triangularly shaped portion said bulbous portion providing an amount of polymer at said apex sufficient to prevent the fracturing of said rib and to maintain the rib continuous over its length upon forming the rib; and said bulbous portion of the rib adopted to turning inwardly toward the base of the opposing longitudinally-extending profile of a second closure member responsive to contact with a sidewall portion of the bag upon interlocking engagement of the longitudinally-extending profile with the opposing longitudinally-extending profile of a second closure member.

5,192,136

CRANKSHAFT BEARING HAVING HYDRODYNAMIC THRUST FLANGES

Ronald J. Thompson, Howell; Ned L. Misner, Stanton, and Michael D. Winegard, Greenville, all of Mich., assignors to Federal-Mogul Corporation, Southfield, Mich.

Filed Dec. 19, 1991, Ser. No. 810,225
Int. Cl.[5] F16C *32/06, 9/02, 33/10*
U.S. Cl. 384—123 **7 Claims**



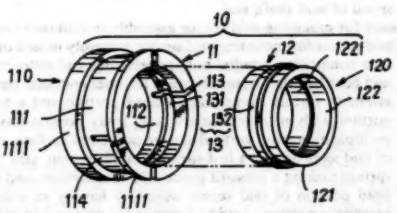
1. A flanged half bearing for a rotary shaft, comprising a one piece element that includes a semi-cylindrical wall having a convex surface and a concave surface, and two flange walls extending radially from the convex surface of said semi-cylindrical wall; each flange wall having an external axially-facing surface and an internal axially-facing surface; said concave surface constituting a radial bearing surface; each external axially-facing surface constituting a thrust bearing surface; oil supply means formed in each thrust bearing surface and subdividing the associated thrust bearing surface into a plural number of thrust bearing pads; each thrust bearing pad comprising a circumferentially extending ramp surface, said ramp surface being effective to induce- a flow of lubricating oil from the oil supply means along the ramp surface, whereby a lubricant film is maintained between each bearing pad and the rotary shaft.

5,192,137

FLEXIBLE PLAIN BEARING AND ITS APPLICATION TO MOTOR VEHICLE STEERING MECHANISMS

Henri J. A. Renard, Seloncourt, France, assignor to ECIA, France

Filed Nov. 21, 1991, Ser. No. 795,388
Claims priority, application France, Nov. 28, 1990, 90 14891
Int. Cl.[5] F16C *17/10, 23/04*
U.S. Cl. 384—275 **11 Claims**



1. Flexible plain bearing for mounting a shaft on a support coaxially in such a way that only one degree of freedom in relative rotation between shaft and support is possible, this bearing (10) being characterised in that it comprises an outer ring (11) made from a sleeve (110) which is delimited by an

outside wall (111) and an inside wall (112) and which carries on its outside wall (111) in the proximity of at least one of its ends a protruding bush (1111), engaged in this outer ring (11) an inner ring (12) which is made from a sleeve (120) which is delimited by an outside wall (121) and an inside wall (122) and which carries on its inside wall (122) in the proximity of at least one of its ends a protruding bush (1221), a link (13) located out of plumb with the bushes (1111, 1221) in order to connect these rings (11, 12) while allowing only a relative rotation between them (11, 12), made by a female element (131) carried by one of these facing walls (112, 121) of the rings (11, 12) and made by a male element (132) carried by the other of these facing walls (112, 121) of the rings (11, 12), these male and female elements (132, 121) being coupled to each other by mutual engagement.

5,192,138

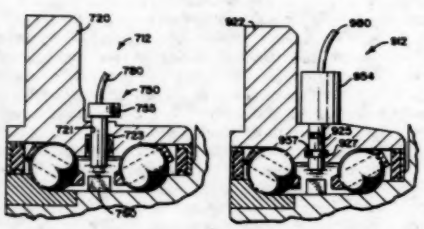
ANTIFRICTION BEARING ASSEMBLY SPEED SENSOR

Bradley D. Faye, Goshen; James A. Hilby, Watertown, both of Conn.; Denis Alff, and Christian Hajzler, both of Annecy, France, assignors to The Torrington Company, Torrington, Conn.

Division of Ser. No. 794,559, Nov. 19, 1991, Pat. No. 5,129,743, which is a division of Ser. No. 736,676, Jul. 26, 1991, Pat. No. 5,123,755, which is a division of Ser. No. 562,502, Aug. 2, 1990, abandoned, which is a division of Ser. No. 422,218, Oct. 16, 1989, Pat. No. 4,960,333. This application Jan. 21, 1992, Ser. No. 822,780

Int. Cl.[5] F16C *33/30*; G01P *3/48*

U.S. Cl. 384—448 **9 Claims**



1. An antifriction bearing assembly for mounting on a rotatable shaft, said bearing assembly comprising:

an outer race which is stationary relative to said shaft, said outer race having an inner surface and an outer surface;

an inner race which is rotatable relative to said outer race, said inner race being attachable to said shaft;

two annular rows of rolling elements between said inner and outer races;

an encoder mounted on said inner race between said two rows of rolling elements;

a sensor assembly having a sensor aligned with said encoder to provide an output signal proportional to the rotational speed of said shaft; and

means for mounting said sensor assembly in said outer race, said means for mounting said sensor assembly in said outer race comprising a radial bore penetrating said outer race, said bore having a counterbore in its inner end, said sensor assembly further comprising a head portion and a body portion with an outer surface, said body portion having multiple elongated vertical slots in said outer surface, each of said slots having a leaf-spring loaded therein, said leaf-springs making a press-fit inside said counterbore, and said head portion of said sensor assembly having an axially-extending portion providing means for prying said sensor assembly out of said bore.

2. An antifriction bearing assembly for mounting on a rotatable shaft, said bearing assembly comprising:

an outer race which is stationary relative to said shaft, said outer race having an inner surface and an outer surface;

an inner race which is rotatable relative to said outer race, said inner race being attachable to said shaft;

two annular rows of rolling elements between said inner and outer races;

an encoder mounted on said inner race between said two rows of rolling elements;

a sensor assembly having a sensor aligned with said encoder to provide an output signal proportional to the rotational speed of said shaft; and

means for mounting said sensor assembly in said outer race, said means for mounting said sensor assembly in said outer race comprising a radial bore penetrating said outer race, said bore having an inner end and an outer end, and said bore having a counterbore, said sensor assembly being inserted into said bore, said sensor assembly further comprising a body portion having multiple O-rings press-fit onto said body portion, at least one of said O-rings sealing out the environment from said sensor, encoder, and rolling elements, and at least one of said O-rings making an interference fit inside said counterbore so as to lock said sensor assembly in position so as to be aligned with said encoder.

5,192,139

APPARATUS FOR COOLING A SPINDLE BEARING OF A MACHINE

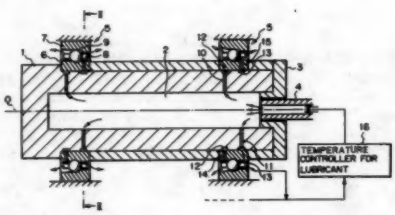
Kazuyuki Hiramoto, Atsugi; Hiromi Hara, Aiko, and Akihiro Mochizuki, Zama, all of Japan, assignors to Makino Milling Maching Co., Ltd., Tokyo, Japan

Filed May 16, 1991, Ser. No. 701,179

Claims priority, application Japan, May 21, 1990, 2-129010; Jun. 29, 1990, 2-170217; Dec. 21, 1990, 2-404935; Dec. 27, 1990, 2-407719

Int. Cl.[5] F16C *19/52, 33/66*

U.S. Cl. 384—476 **22 Claims**



1. An apparatus for cooling a bearing for rotatably supporting a spindle of a machine by a liquid lubricant supplied to a cavity of the spindle, the bearing including an inner race fitted on an outer cylindrical face of the spindle, an outer race stationarily held in a housing element of the machine, and rolling elements rotatably held in tracks of the inner and outer races thereof, comprising in combination:

a first means for permitting said liquid lubricant to flow from said cavity of said spindle toward said outer cylindrical face of said spindle when said spindle is rotated, said first means comprising at least one radical lubricant passageway provided in said spindle and radially extending from said cavity toward said outer cylindrical face of said spindle;

a second means for permitting said liquid lubricant to flow in a circumferential direction on said outer cylindrical face of said spindle when said liquid lubricant flowing from said cavity of said spindle reaches said outer cylindrical face, said second means comprising an annularly extending recess provided in at least one of a cylindrical inner face of said inner race of said bearing and said outer cylindrical face of said spindle, said annularly extending recess being in communication with said radial lubricant passageway of said spindle; and

a third means for permitting said liquid lubricant to be

sprouted from said annularly extending recess into a space between said inner and outer races of said bearing to thereby permit said lubricant to come into contact with said rolling elements and said tracks of said inner and outer races when said spindle is rotated, said third means comprising at least one radial lubricant passageway provided in said inner race which radially extends from said annularly extending recess toward an outer face of said inner race having said track thereof, said radical lubricant passageway being spaced in a circumferential direction from said radial lubricant passageway of said spindle;

a fourth means for returning said liquid lubricant from said spacing between said inner and outer races of said bearing to a predetermined lubricant receiving means for receiving said liquid lubricant returned from said bearing and applying a temperature control treatment to said returned liquid lubricant; and

a fifth means for routing said liquid lubricant after said temperature control treatment from said predetermined lubricant receiving means to said cavity of said spindle, thereby enabling said liquid lubricant for lubricating and cooling said bearing to be reused;

said fifth means comprising a liquid delivery pump having an outlet for delivering said liquid lubricant after said liquid has undergone said temperature control treatment under a predetermined pressure,

a lubricant supply piping having one end connected to said outlet of said liquid delivery pump and the other end connected to an opening of an end of said spindle for supplying said liquid lubricant delivered by said liquid delivery pump into said cavity of said spindle, said other end of said lubricant supply piping being spaced relative to said opening of said end of said spindle to provide a small cylindrical gap therebetween when said spindle is rotated,

a means for setting an amount of liquid lubricant delivered from said liquid delivery pump at a predetermined value which is larger than an amount of said liquid lubricant supplied to said bearing through said first through third means, and

a lubricant collecting means for collecting any excess liquid lubricant with respect to said liquid lubricant supplied to said bearing which returns said collected excess liquid lubricant to said lubricant receiving means.

5,192,140

APPARATUS AND METHOD OF PRINTING DATA IN A BOOK, A NOTEBOOK, OR THE LIKE

Hideki Nukada, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 23, 1990, Ser. No. 617,366

Claims priority, application Japan, Nov. 24, 1989, 1-303212; Dec. 7, 1989, 1-316444; Dec. 12, 1989, 1-320653

Int. Cl.[5] B41J *3/28, 13/22*

U.S. Cl. 400—26 **7 Claims**

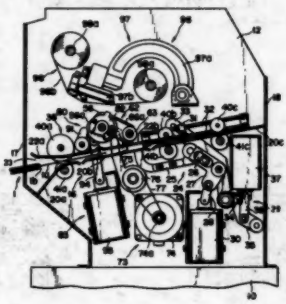
1. An apparatus for printing data on any specified page of a book formed of a plurality of pages fastened together at a seam, said printing apparatus comprising:

means for positioning and holding a specified page of the book, on which to print data;

a tension-applying means for pulling any selected page of the book, other than the specified page, so as to apply a tension on the specified page through the seam of the book; and

means for printing data on the specified page applied with the tension;

wherein said positioning/holding means comprises a support member for supporting the specified page and chucking means for cooperating with the support member to chuck the specified page, and said chucking means has a chucking member movable between a chucking position where the chucking member contacts said support member and a waiting position where the chucking member is remote from said support member, means for pressing said chucking member onto said support member with a force having a vector component extending in the same direction said tension acts on the specified page, when said chucking



member moves to the chucking position, and means for detecting whether or not the specified page is clamped between said chucking member and said support member, in accordance with the position of said chucking member.

5,192,141

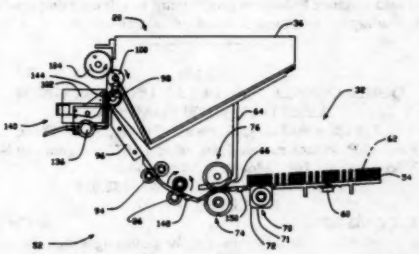
MULTI-DIMENSIONAL MEDIA PRINTER WITH MEDIA BASED REGISTRATION AND FREE EDGE PRINTING

T. Mark Chung, Carrollton; Anthony G. Orchard, Dallas; William H. Baker, Arlington, and Charles L. Bradford, Garland, all of Tex., assignors to Tidemark Corporation, Newark, Calif.

Filed May 2, 1991, Ser. No. 694,930

Int. Cl.[5] B41J *11/20*

U.S. Cl. 400—56 **45 Claims**



1. A printer for imprinting data on a variety of multi-dimensional media including a means for transporting the media, which media transporting means includes:

a pick roller means adapted for contacting the bottommost media from a stack of media and for urging the bottommost media out from the bottom of the stack of media;

a feed roller means adapted for engaging the bottommost media urged out from the stack of media by the pick roller means and for initiating the feeding of the bottommost media through the printer in a media feeding direction;

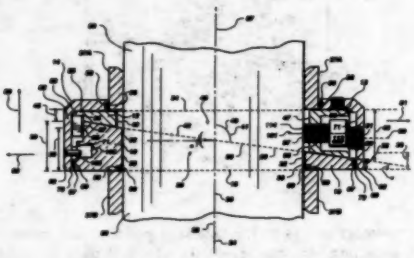
wherein said feed roller means includes a feed roller with a plurality of media engaging notches provided about the periphery of the feed roller, which notches allow a leading edge of the media to be caught by the feed roller means.

5,192,142

PUMP IMPELLER RELEASE COLLAR ASSEMBLY

John Hyll, Sandy, Utah, assignor to Baker Hughes Incorporated, Houston, Tex.

Filed Sep. 27, 1990, Ser. No. 589,319
Int. Cl.[5] F16B 1/00; F04D 29/08
U.S. Cl. 403—16 24 Claims



1. A pump impeller release collar assembly for use in releasing compression loaded members stacked on a shaft, said assembly comprising:

a pair of collars, a first collar being mountable on a shaft, said first collar having a first planar inner surface which is orientable transverse to a longitudinal axis of said shaft;

a second collar mountable on said shaft contiguous said first collar, said first collar and said second collar being positionable between a plurality of members stacked on said shaft; said second collar defining a second inner surface positioned contiguous said first inner surface, said second collar having a mounting means associated therewith adapted for rendering said second collar radially displaceable from said shaft's longitudinal axis, said first collar and said second collar having an outer surface adapted for engaging a respective said member stacked on said shaft; said pair of continuously-mounted collars defining a distance between said outer surfaces;

wherein said distance is reduced by displacing said second collar radially and axially of said shaft's longitudinal axis, said distance reduction functioning to release compressive loading on members stacked on said shaft.

5,192,143

QUICK CONNECT MODULAR UNIT RETAINER ASSEMBLY WITH DAMPING

Robert J. Lajara, San Jose; Steven J. Furuta, Santa Clara, and Vincent P. Hileman, San Jose, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

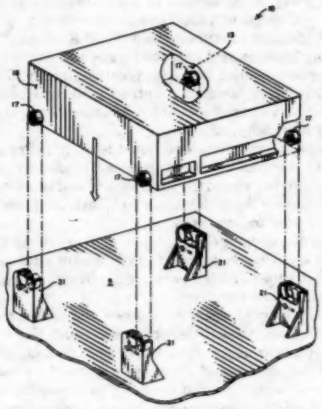
Filed May 15, 1992, Ser. No. 883,533
Int. Cl.[5] F16D 1/00
U.S. Cl. 403—24 20 Claims

1. A retainer assembly for securely mounting a modular unit to a base, the retainer assembly comprising:

a plurality of compliant inserts projecting from the modular unit;

a plurality of bosses attached to and projecting upward from the base, each boss comprising an "L"-shaped receiving channel embedded in a first vertical surface for slideably receiving the insert corresponding to said boss, the "L"-shaped receiving channel further comprising a vertical channel and a horizontal channel, the vertical channel having an upper and a lower end, the horizontal channel having a terminus and being connected perpendicularly to the lower end of the vertical channel, the upper end of the vertical channel having an opening in the boss, the horizontal channel being narrower than the insert and having an upper and a lower wall, the upper wall having an upper detent ridge disposed opposite a corresponding lower detent ridge disposed in the lower wall, the upper and lower detent ridges located so that the insert is urged against the upper and the lower detent ridges when the insert is positioned in the terminus;

said vertical channels of said "L"-shaped receiving channels receiving said inserts until the inserts rest upon the lower walls of said horizontal channels, said horizontal channels



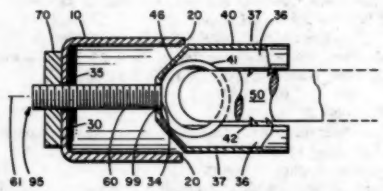
of said "L"-shaped receiving channels further receiving said inserts between the upper and lower detent ridges until the inserts reach the termini, the compliant inserts compressing when passing the upper and lower detent ridges and then expanding to substantially conform to the termini and securely mounting the modular unit to the base.

5,192,144

END FINISHING DEVICE FOR ROPE, WIRE, CABLE, AND THE LIKE

Michael B. Doninger, 1815 Yale Rd., Merrick, N.Y. 11566

Filed Jun. 4, 1991, Ser. No. 710,106
Int. Cl.[5] F16B 1/00
U.S. Cl. 403—209 19 Claims



1. An apparatus for engagement with and for end finishing of a termination of a flexible item such as a rope, cord, wire, cable or the like, and for use with a bolt means having an eye member through which the termination can extend and also having a longitudinally extending threaded rod member coupled at a first end to said eye member with said eye member being in alignment with the longitudinal axis of the threaded rod member, said apparatus comprising:

(a) a hollow rigid sleeve member open at one end and having a first opening at its opposite end, wherein the rod member can pass through said first opening in said sleeve member; and

(b) a compressible gripping member open at one end and having a second opening at its opposite end through

which said rod member can pass, and having inwardly extending barbs for gripping said termination, said gripping member at least partially surrounding a doubled over portion of the termination, and configured to engage said eye member to substantially prevent rotation of said eye member relative to said compressible gripping member, said gripping member being adapted to be drawn into said hollow sleeve member and to be compressed thereby so as to be in a close nesting fit within said sleeve member.

5,192,145

CROSS COUPLING FOR BARS

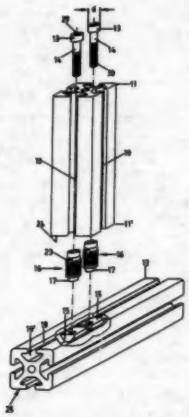
Wolfgang Rixen, and Gerrit Pies, both of Friedenstrasse 107-109, 5650 Solingen 11, Fed. Rep. of Germany

Filed May 20, 1991, Ser. No. 702,424

Claims priority, application Fed. Rep. of Germany, May 21, 1990, 4016320

Int. Cl.[5] B25G *3/00*

U.S. Cl. 403—255 **16 Claims**



1. A cross coupling arrangement for two bars disposed at right angles to one another, which bars have undercut longitudinal grooves said coupling arrangement including a threaded fastening with a head at one end, which threaded fastening is disposed parallel to the symmetry axis of longitudinally running bar in an undercut longitudinal groove of same, and the other end of which engages a nut disposed in an undercut longitudinal groove of a transversely running bar, and the head of which extends beyond or behind a cylindrical insert installed axially into the undercut longitudinal groove of the longitudinally running bar, and which has a bore through it for the screw, characterized in that the symmetry axis of the cylindrical insert is coaxial with the symmetry axis of the bore through it for the screw, and the outside diameter of the cylindrical insert is so adapted to the cross section of the undercut longitudinal groove of the longitudinally running bar that a thread provided on the outer circumference of the cylindrical insert provides a self-tapping thread cutting into the material of the bar longitudinally running and having within its length a transversely disposed bore forming cutting edges along the intersection of the bore with the self tapping threads.

5,192,146

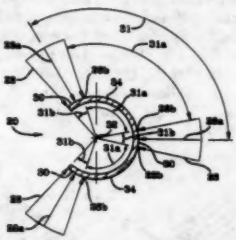
OPEN SEAM FRICTION ROCK STABILIZER

Thomas J. Landsberg, Princeton, N.J., assignor to Simmons-Rand Company, Bristol, Va.

Filed Aug. 30, 1991, Ser. No. 753,106

Int. Cl.[5] E21D *21/00*

U.S. Cl. 405—259.1 **11 Claims**



1. A friction rock stabilizer for use in a substantially circular cross sectional borehole comprising:

a. an elongated hollow tubular body having a tapered top end, a bottom end and a shank portion therebetween; and

b. compression means extending along the length of the body for permitting resilient compression of the body during insertion into an undersized borehole, and for resiliently urging a plurality of friction load bearing surfaces extending the length of said shank into frictional load bearing contact against the borehole wall, said friction load bearing surfaces, after said body is inserted into the borehole, being spaced apart from each other at an angle between 70 degrees and 150 degrees, as measured around a center axis of the borehole, said friction load bearing surfaces having therebetween wall portions of said shank that are substantially in noncontact with the wall of the borehole, said compression means comprising a slit extending along the length of the body, said slit, after said body is inserted into the borehole, having a width extending completely between two adjacent friction load bearing surfaces.

5,192,147

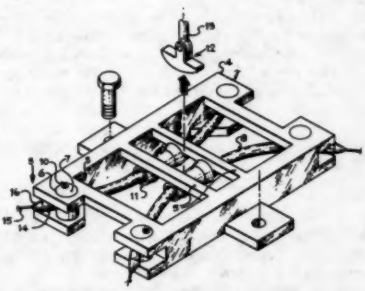
NON-PYROTECHNIC RELEASE SYSTEM

Thomas E. McCloskey, San Jose, Calif., assignor to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Filed Sep. 3, 1991, Ser. No. 753,556

Int. Cl.[5] B25G *3/18*

U.S. Cl. 403—322 **7 Claims**



1. A pyrotechnic free release system comprising at least one shape memory rod assembly, said rod assembly having a first shape at normal temperatures and a second shape when heated to an elevated temperature, means for retaining one end of the rod assembly for rotatable movement and means for retaining

the other end of the rod assembly for rotatable movement and sliding movement, a toggle assembly, said toggle assembly including a shaft and a pivoting toggle, means mounted on said shape memory rod assembly for selectively retaining and releasing said pivoting toggle.

5,192,148

DOT LINE PRINTER HAVING IMPROVED COMB YOKE

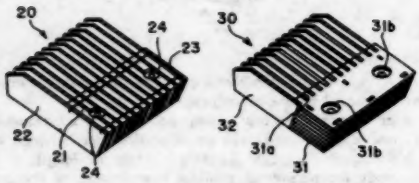
Shigenori Suematsu; Yoshikane Matsumoto; Shinichi Sakamoto, and Hirotaka Kobayashi, all of Katsuta, Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan

Filed May 22, 1991, Ser. No. 704,149

Claims priority, application Japan, May 25, 1990, 2-135752

Int. Cl.[5] B41J *9/38*

U.S. Cl. 400—157.2 **16 Claims**



1. A hammer bank assembly of a dot line printer for providing dot impression images on a printing sheet during reciprocal movement of the hammer bank assembly, the printing sheet being fed in a line to line direction, the hammer bank assembly comprising:

a hammer base reciprocally movable in a shuttling direction, the hammer base having a front face;

a plurality of leaf spring type printing hammers held on the front face of the hammer base and arranged side by side at a predetermined pitch in the shuttling direction, the printing hammers having front faces in confrontation with the printing sheet, and having rear faces;

permanent magnets mounted on the hammer base for attracting the printing hammers away from the printing sheet;

a comb yoke mounted on the hammer base, the comb yoke having a base portion positioned on the permanent magnets and pole portions secured by the base portion and extending from the base portion toward the rear faces of the printing hammers, the rear faces of the printing hammers being attracted toward the pole portions by the permanent magnets, the pole portions being made of a first material having a first, highly saturated magnetic flux density, and the base portion comprising a plurality of metal plates laminated together and containing a second material having a second, lower saturated magnetic flux density; and

electromagnetic coils wound over the pole portions for releasing the attracted printing hammers from the pole portions for creating dot impressions, wherein the comb yoke comprises first yoke pieces and second yoke pieces alternately arranged side by side in the shuttling direction in a laminating fashion, the second yoke pieces constituting the pole portions and the alternate first and second yoke pieces laminated together constituting the base portion.

5,192,149

CASSETTE FOR TYPING RIBBON FOR TYPEWRITERS

Claudio Gillio, Brosso Canavese, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Oct. 31, 1990, Ser. No. 606,946

Claims priority, application Italy, Dec. 21, 1989, 68145 A/89

Int. Cl.[5] B41J *33/14*

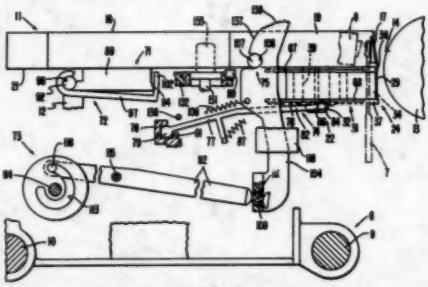
U.S. Cl. 400—208 **18 Claims**

1. A unitary typing and correction cassette for a typing machine or the type comprising a platen roller having a typing point, and a carriage movable parallel to the platen, said carriage having support means for pivotally supporting the cassette, a ribbon feed mechanism for feeding a typing ribbon of the cassette, a lifting device for the cassette, and a hooked lever for feeding a correction ribbon in response the lifting of the cassette, wherein said support means comprise two pivot seats spaced apart from each other parallel to the platen, wherein said ribbon feed mechanism comprises a feed shaft having a connection member positioned between the pivot seats and the platen and wherein said lifting means comprises a lifting lever having a seat also positioned between the pivot seats and the platen for providing a vertical reciprocatory movement, said unitary cassette comprising:

a container for accommodating a typing ribbon, having a bottom wall and two projecting arms, wherein said arms have guide ends for positioning an external portion of the typing ribbon in front of the typing point;

a feed roller and a pinch roller rotatably supported by said container and engaging the typing ribbon, wherein said feed roller is engageable with said connection member of the feed shaft for producing unidirectional feed of the typing ribbon;

two members projecting downwardly from said bottom wall and having respective lateral pivot projections, wherein said pivot projections are engageable with the pivot seats



of said support for oscillatory movement of said cassette about an axis of oscillation parallel to the platen;

a pin projecting laterally from one of said arms and engageable with the seat of said lifting lever for actuating said oscillatory movement of the cassette in response to the reciprocatory movement of said lifting lever; and

a correction portion with a correcting ribbon attached downwardly to said bottom wall, said correction portion comprising:

a supply spool and a take up spool for the correction ribbon rotatably supported by two respective coupling members projecting downwardly from said arms, wherein said coupling members comprise a plurality of flexible tongues with bevel surface of manual snap fitting and removal of said spools;

two guide elements projecting downwardly from said guide ends for guiding a portion of said correction ribbon below the external portion of the typing ribbon in parallel relationship to the platen; and

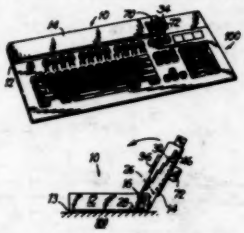
a toothed ring on said take up spool, wherein said hooked lever has two hook portions cooperative with oppositely disposed teeth of said ring upon engagement of said pivot projections with said pivot seats and said lever seat with said pin for advancing the correcting ribbon upon the oscillatory movement of said cassette.

5,192,150

COMPUTER KEYBOARD TEMPLATE SELECTOR

Karl A. Riggeberg, 129 Lancer Rd., Riverside, Conn. 06878

Filed Sep. 10, 1991, Ser. No. 757,223
Int. Cl.[5] B41J 5/00
U.S. Cl. 400—477 12 Claims



1. An apparatus for selecting and displaying a computer keyboard template from among a plurality of computer keyboard templates, the apparatus comprising:

a base including means for attaching said base to a computer keyboard;

a lid including hinge means attached to said base;

a plurality of separator sheets rotatably engaging said base, each of said separator sheets providing a surface including an adhesive strip for engaging a computer keyboard template, at least one of said separator sheets further including a laterally extending tab;

wherein each of said laterally extending tabs are wider than any lower adjacent laterally extending tab thereby forming an inverted stair structure;

selecting means which is movable to a plurality of positions, each of said plurality of positions corresponding to one of said separator sheets;

said selecting means moving a lifting means which selectably engages said laterally extending tabs whereby when said lid is subsequently opened, a selected laterally extending tab, a selected separator sheet corresponding thereto, and all separator sheets above said selected separator sheet are lifted to expose a separator sheet below said selected separator sheet; and

a label adjacent to each of said plurality of positions corresponding to a computer template exposed by said lifting means when said selecting means is placed in a respective position chosen from said plurality of positions.

5,192,151

PRINTER

Reijo Mattila, Helsinki, Finland, assignor to ICL Personal Systems Oy, Helsinki, Finland

Filed Mar. 16, 1992, Ser. No. 851,948
Claims priority, application Finland, Mar. 25, 1991, 911427
Int. Cl.[5] B41J 11/42
U.S. Cl. 400—579 2 Claims

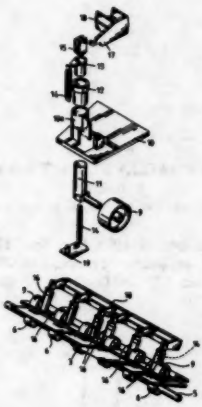
1. A printer for printing on a document, comprising:

a print head;

a paper path for the document to be printed; and

a document transfer device arranged in connection with said paper path, said document transfer device comprising: a plurality of drive pulleys arranged in parallel for gripping an underside of the document and positioned in at least two sequential rows, and a plurality of spring-actuated pressure rollers arranged in parallel and disposed across the entire paper path in two rows sequentially above said drive pulleys so as to form pairs of drive pulleys and pressure rollers, with said pressure rollers pressing the document from above against said drive pulleys;

said document transfer device further comprising: support means for each of said pressure rollers situated in one of said two rows of pressure rollers; a first spring and a second spring, for pressing each of said pressure rollers downwards against a corresponding drive pulley, are arranged in connection with said support means of each of said pressure rollers, whereby a stiffness of said first spring is substantially stronger than a stiffness of said second spring; and release means for releasing said first spring having the stronger stiffness, in which case only said second spring having a weaker stiffness influences the corresponding pressure roller and presses it downwards, and



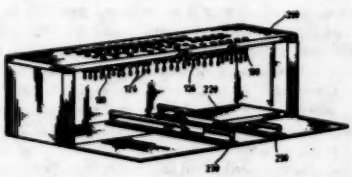
wherein said support means comprises a support arm, on which a corresponding one of said pressure rollers is mounted in bearings; a support base; a sleeve connected to said support base, within which sleeve said support arm is slidingly arranged from below; said first stiffer spring being arranged to press said support arm, and said second weaker spring being arranged between said support arm and said support base so that said first and second springs press said support arm and said corresponding one of said pressure rollers connected thereto against a corresponding one of said drive pulleys.

5,192,152

SWITCH ACTUATOR

James T. Silvestri, Woodlands; Todd D. Podhajsky, Spring; Timothy E. Klein, Cypress; Mark W. Baker, Spring, and David J. Czarnek, Houston, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed May 31, 1991, Ser. No. 708,344
Int. Cl.[5] B41J 29/00
U.S. Cl. 400—679 4 Claims



1. An apparatus for testing press-to-actuate switches comprising:

a plurality of fluid-actuated actuators having an element which extends and retracts in response to fluid pressure with each actuator positioned to align its extending/retracting element with a corresponding switch in an array of switches;

means for supplying either a lower fluid pressure or a higher fluid pressure to any actuator;

means for selecting either a first fluid pressure or a second fluid pressure as the lower fluid pressure;

means for selecting either atmospheric or subatmospheric pressure as the second fluid pressure; and,

control means for selecting the lower fluid pressure, higher fluid pressure, first fluid pressure, second fluid pressure, atmospheric pressure, and subatmospheric pressure.

5,192,153

AGITATOR ASSEMBLY FOR A PASTY COSMETIC PRODUCT

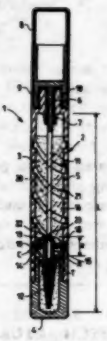
Jean-Louis H. Gueret, Paris, France, assignor to L'Oreal, Paris, France

Filed Jun. 10, 1991, Ser. No. 713,058

Claims priority, application France, Jun. 27, 1990, 90 08083

Int. Cl.[5] A45D *40/00, 40, 18*

U.S. Cl. 401—4 **8 Claims**



1. An applicator assembly comprising a container for a pasty cosmetic product having a heterogenous or thixotropic composition, said container having lateral wall, at one end of said lateral wall a neck and a bottom at an opposite end of said lateral wall, said neck having a drainage lip, a cap having means for fixing said cap on said neck and carrying a rod, said rod having an end remote from said cap, said end having an applicator element, said rod having a length so that said applicator element is disposed adjacent said bottom when said cap is mounted on said neck of said container, a stirring element rotatably mounted in said container, said container having driving means for rotatably driving said stirring element upon movement of said rod out of said container, said stirring element having extensions extending radially from said rod toward said lateral wall when said rod is in said container, said extensions defining axial passages between adjacent said extensions, said assembly further including control means for moving said stirring element along said lateral wall with said rod while permitting rotation of said stirring element, said stirring element having at least two oppositely extending radial projections, said driving means comprising two helical grooves on said lateral wall each receiving a said projection.

5,192,154

APPLICATOR INSERT FOR AN APPLICATOR IMPLEMENT

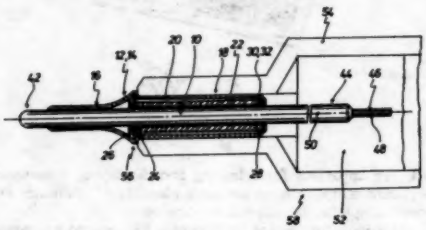
Gerhard Moeck, Kirchehrenbach, Fed. Rep. of Germany, assignor to Schwan-Stabilo Schwanhaeusser GmbH & Co, Nuremberg, Fed. Rep. of Germany

Filed May 6, 1991, Ser. No. 696,213

Claims priority, application European Pat. Off., Jun. 15, 1990, 90111302.7

Int. Cl.[5] B43K *3/00, 8/02*

U.S. Cl. 401—198 **9 Claims**



1. An applicator insert for an applicator implement comprising: a fine liner applicator member having a diameter of from about 0.5 to 2 mm and having capillary spaces and having a front end portion providing an applicator portion and a rearward end portion providing a feed portion for feeding application medium to the applicator member; a holding means accommodating the applicator member and having a continuous, single, unitary, tubular sleeve adjacent the applicator member including a front end portion of an internal cross-section adapted to the applicator member, with the applicator portion of the applicator member projecting from the sleeve at the front end portion thereof, and the sleeve including a rearward sleeve portion from which said feed portion projects and which is of an internal cross-section larger than the cross-section of applicator member so that an intermediate space is provided between the rearward sleeve portion and the applicator member, said rearward sleeve portion including a support shoulder means formed by an edge portion of said rearward sleeve portion, said edge portion being turned over inwardly of the sleeve; a spring means disposed in said space and having a front end portion and a rear end portion which is fixed with respect to the rearward sleeve portion, wherein said spring means is supported with its rear end portion against said support shoulder means and wherein said spring means is a tubular sleeve comprising a resiliently yielding plastic material; and a ring element on the applicator member and co-operating with said front end portion of said spring means to fix same with respect to the applicator member to provide for resilient displaceability of the applicator member with respect to the sleeve, the ring element being adapted in a non-loaded condition to be fitted on to the applicator member and in the fixing condition being clamped against the outside peripheral surface of the applicator member with a defined clamping force which does not interfere with said capillary spaces.

5,192,155

MAGNETIC GRIPPER DEVICE

Ross E. Meyer, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 20, 1992, Ser. No. 870,965

Int. Cl.[5] B25G *3/12*

U.S. Cl. 403—410 **6 Claims**

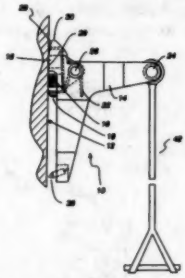
1. Apparatus for releasable attachment to a ferromagnetic surface, comprising:

magnet means for adhering to said ferromagnetic surface;

a frame rotatably attached to said magnet means; and

cam means defined by said frame having a first dimension

effective for placing said magnet means against said ferromagnetic surface and a second dimension effective to detach said magnet means from said ferromagnetic surface, where the spacing of said magnet means from said ferromagnetic surface varies as said cam means is rotated by said frame on said ferromagnetic surface between said first and said second dimensions.

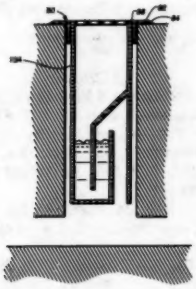


5,192,156

DRAIN APPARATUS WITH LIQUID TRAP

James E. Webb, Richmond, Calif., assignor to Nsertaseal Corporation, Richmond, Calif.

Filed May 28, 1991, Ser. No. 706,322
Int. Cl.[5] E01C *11/22*
U.S. Cl. 404—4 **4 Claims**



1. Apparatus for draining liquid from a surface into a sewer through a passageway extending between said surface and said sewer and for forming a liquid barrier between said sewer and said surface for preventing the flow of gases from said sewer to said surface, said apparatus being selectively, positionable in said passageway and removable therefrom as a unit, and said apparatus comprising, in combination:

a conduit including a peripheral wall defining an interior and having an upper end, a lower end, and a longitudinal axis extending through upper and lower ends;

support means for supporting said conduit within said passageway with the lower end of said conduit below said surface, said conduit upper end being substantially open and defining an upwardly directed drain opening providing communication between said interior and ambient atmosphere above said surface and allowing liquid to drain from said surface directly downwardly in a vertical direction along said longitudinal axis through said drain opening into the interior of said conduit;

a bottom wall connected to said peripheral wall and partially extending across said lower end to define an opening at said lower end with said peripheral wall, said bottom wall being in partial registry with said drain opening;

a partition extending upwardly from said bottom wall and connected to said peripheral wall to define a trough within said conduit interior, said partition having a distal end spaced from said lower end;

a deflector connected to said peripheral wall and disposed above said partition and said opening and below said drain opening whereby liquid draining from said surface directly downwardly in a vertical direction through said drain opening will directly impact said deflector, said deflector slanting downwardly and having a lower deflector edge located over said trough, said deflector having an upper liquid impact surface deflecting the liquid entering said conduit through said drain opening and directly impacting said deflector and directing said deflected liquid into said trough, said deflector also having a lower impact surface disposed over a segment of said bottom wall and over said opening; and

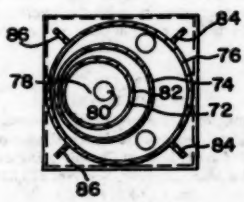
a baffle extending downwardly from the lower deflector edge of said deflector and having a lower distal end located in said trough above said bottom wall and below the level of said partition distal end, said conduit, said bottom wall, said partition, said deflector, and said baffle being fixedly connected whereby said apparatus is of integral construction, said conduit peripheral wall, said baffle, and said partition defining a generally S-shaped fluid flow path within said interior, said generally S-shaped fluid flow path including a first fluid flow path portion disposed at a first side of said interior between said conduit peripheral wall and said baffle, a second fluid flow path portion between said baffle and said partition substantially parallel to said first fluid flow path portion and communicating therewith at said conduit lower end, and a third fluid flow path portion disposed at a second side of said interior between said conduit peripheral wall and said partition, said third fluid flow path portion substantially parallel to said first and second fluid flow path portions and in communication with said second fluid flow path portion through an aperture defined by said conduit peripheral wall, said deflector, and said partition distal end, said third fluid flow path portion leading to said opening whereby liquid in said third fluid flow path portion flowing to said opening facilitates flow of liquid through said generally s-shaped fluid flow path, said third fluid flow path portion being longer than said second fluid flow path portion whereby liquid in said third fluid flow path portion creates a siphoning effect on the liquid in said generally S-shaped fluid flow path, and said deflector lower liquid impact surface for reorienting liquid flow when said liquid flows from said second fluid flow path portion into said third fluid flow path portion.

5,192,157

VEHICLE CRASH BARRIER

John F. Laturner, Carmichael, Calif., assignor to Energy Absorption Systems, Inc., Chicago, Ill.

Filed Jun. 5, 1991, Ser. No. 710,830
Int. Cl.[5] E01F *15/00*
U.S. Cl. 404—6 **47 Claims**



1. A vehicle crash barrier adapted to decelerate an impacting vehicle, said crash barrier comprising:

at least one energy-absorbing element comprising at least

one column and a foam disposed within the column, wherein the column comprises a sheet of material which defines an array of perforations extending along and around the column, wherein the column defines a longitudinal axis extending along a length direction of the column; and

a mounting system coupled to the column and configured to mount the column alongside a roadway with the longitudinal axis extending substantially parallel to the roadway;

said column having sufficient rigidity such that, when an impacting vehicle having an initial kinetic energy impacts the energy-absorbing element and collapses the column along the longitudinal axis, the foam braces the column against buckling, and deformation of the column absorbs a greater fraction of the initial kinetic energy than does deformation of the foam.

5,192,158

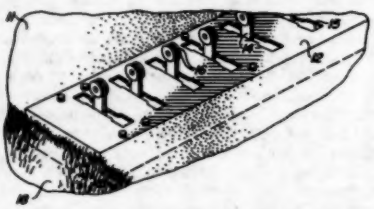
APPARATUS FOR CONTROLLING THE DIRECTION OF VEHICULAR TRAFFIC MOVEMENT

Richard E. Bailey, Gilbert, and Clarence G. Austin, Scottsdale, both of Ariz., assignors to Park N' Shade, Phoenix, Ariz.

Filed Mar. 11, 1991, Ser. No. 667,458

Int. Cl.[5] E01F *9/00, 13/00*

U.S. Cl. 404—11 **12 Claims**



1. Apparatus for allowing vehicle traffic flow in a permitted direction while inhibiting flow in the reverse direction which comprises:

a) a planar member for supporting motor vehicles traveling thereacross, said member having a plurality of openings spaced thereacross;

b) a plurality of actuating levers, each lever having a first end extending upwardly through one of said openings and positioned to contact a vehicle tire passing across the planar member;

c) coupling means located beneath said planar member for rotationally mounting said levers to permit movement in the directions of said traffic flow, said levers moving to a position beneath said planar member when contacted by a vehicle tire;

d) contacting means rotationally mounted on the first end of said levers and having a circumferential surface for contacting a vehicle tire and moving along the surface thereof; and

e) a plurality of piercing members operatively connected to said actuating levers beneath the planar member, said piercing members rotating with the levers to engage a tire when a vehicle is moving in the reverse direction.

5,192,159

SECURITY POST

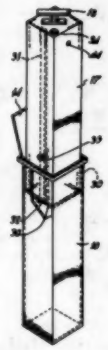
Barry Higginson, 281 Newton Road, Lowton, Warrington, Cheshire, England, assignor to Barry Higginson and Arthur Kirkham et al. Crook, both of Cheshire, England

Filed Mar. 22, 1991, Ser. No. 673,529

Int. Cl.[5] E01F *9/00*

U.S. Cl. 404—11 **11 Claims**

1. A security post comprising a tubular member to be located in the ground with its upper open end substantially level with the surface, a post slidably located within the tubular member between a first position in which it is at least substantially enclosed within the latter and a second position in which it is upstanding therefrom, means for locking the post in at least the second of said two positions, a cover for the upper open end of the tubular member, further means within the tubular member separate from the locking means, to prevent unauthorized



removal of the post therefrom, and wherein for the two parts comprising the tubular member and the post, the removal prevention means includes an abutment located within one of said parts and a movable bar fixed within the other of said parts and having a member extending outwardly therefrom to engage the abutment, and further including means for enabling authorized disengagement of the bar from the abutment.

5,192,160

METHOD AND APPARATUS FOR MAKING MANHOLES

Alexander Muehlstaedter, Gartenstr. 7, D-6749 Birkenhoerdt-Bad Bergzabern, Fed. Rep. of Germany

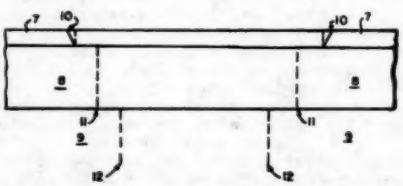
PCT No. PCT/EP89/00361, § 371 Date Dec. 19, 1991, § 102(e) Date Dec. 19, 1991, PCT Pub. No. WO89/09307, PCT Pub. Date Oct. 5, 1989

PCT Filed Mar. 31, 1989, Ser. No. 585,113

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1988, 3810933

Int. Cl.[5] E01C *23/06, 23/09, 23/12*

U.S. Cl. 404—72 **11 Claims**



1. In a method of making manholes and trenches in hard top traffic areas, which comprise a substructure and a top structure which top structure consists of a support layer disposed on a support structure and a final top layer of bituminous or concrete material, the improvement comprising the steps of cutting the top layer down to the support layer by means of a circular saw, then cutting the support layer at a distance of about 30 cm from the top layer saw cut toward the center of the manhole or trench and finally cutting the support structure suitably in stepped fashion by means of a hydraulic jack hammer with a chisel blade thereby generating cut material and removing the cut material by an excavator.

5,192,161

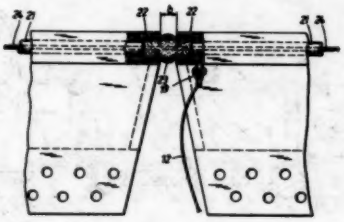
FLOATING STRUCTURE FOR USE AS A BREAKWATER

Ulf Helgesson, Angsvagen 21, and Bjorn Helgesson, Lycke 743, both of Brastad, Sweden S-450 30

Division of Ser. No. 530,239, May 30, 1990, abandoned. This application Aug. 2, 1991, Ser. No. 739,903

Int. Cl.[5] B63B *35/38*

U.S. Cl. 405—26 6 Claims



1. A floating structure suitable for use as a breakwater comprising a plurality of concrete displacement members having a pair of longitudinal sides, a pair of transverse sides and a top portion, each of said plurality of concrete displacement members being at least partially filled with buoyancy means comprising lightweight filler material whereby said plurality of concrete displacement members are sufficiently buoyant to be maintained above the water line when placed in a body of water, and means for maintaining said plurality of said concrete displacement members in a longitudinal series comprising corresponding longitudinally-extending channels along each of said plurality of concrete displacement members between said pairs of transverse sides and below said top portion and including end portions at said pairs of transverse sides, each of said longitudinally-extending channels including recess means at said end portions thereof whereby said recesses are juxtaposed between each of said plurality of concrete displacement members, said recesses having a length of between about 2 and 4 inches, resilient members contained within said juxtaposed recesses between each of said plurality of concrete displacement members and having a length greater than that of said juxtaposed recesses by a distance of at least about 0.4 inches such that upon the application of a compressive force between said plurality of concrete displacement members said resilient members will bulge outwardly so as to partially fill the space between said pair of transverse sides and prevent said transverse sides from contacting each other, said resilient means including a predetermined resiliency and having a Shore hardness of between about 70 and 98 whereby said resilient members are contained within said recesses and spaced from said pairs of transverse sides and from said top portion such that relative movement of said resilient members with respect to said plurality of concrete displacement members is substantially prevented, and tension means for rigidly attaching each of said plurality of concrete displacement members to each other with said resilient members therebetween, with sufficient tension such that said plurality of concrete displacement members are rigidly attached to each other while said corresponding transverse sides of said concrete displacement members are prevented from inadvertently contacting each other by means of said resilient member bulging outwardly so as to partially fill said space between said pair of transverse sides.

5,192,162

POOL APPARATUS AND METHOD OF MAKING

Gordon McKinnon, 119 South Oregon Ave., Tampa, Fla. 33606

Filed Nov. 8, 1991, Ser. No. 790,649

Int. Cl.[5] E04H *3/16, 3/18*

U.S. Cl. 405—55 18 Claims

1. A swimming pool apparatus, comprising:

a base extending within a peripheral edge;

said base being contoured to form the bottom of the pool;

a plurality of upright supports disposed adjacent said peripheral edge of said base;

a side wall sheet extending about said peripheral edge of said base;

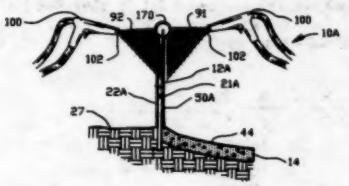
said side wall sheet being disposed between said peripheral edge of said base and said plurality of upright supports;

said side wall sheet having an inner surface facing an interior of the pool and an outer surface facing an exterior of the pool;

means for affixing said side wall sheet to said plurality of upright supports;

an inner coating disposed on said inner surface of said side wall sheet and disposed on said base for affixing said side wall sheet to said base and for forming an interior surface for the pool; and

an outer coating disposed on said outer surface of said side wall sheet for affixing said side wall sheet to said plurality of upright supports.



16. The method of making an in ground swimming pool, comprising the steps of:

excavating a hole in the ground in the shape and the depth of the desired pool;

installing plurality of upright supports into the ground about the periphery of the excavated hole;

affixing a side wall sheet to the plurality of upright supports for defining the sidewall of the pool;

pouring a cementitious base within the side wall sheet to form the bottom of the pool;

applying a fiberglass coating on an inner surface of the side wall sheet and on the cementitious base for affixing the side wall sheet to the cementitious base and for forming an interior surface for the pool; and

applying a fiberglass coating on an outer surface of the side wall sheet for affixing the side wall sheet to the plurality of upright supports.

5,192,163

CORRECTION METHOD FOR CONTAMINATED SITES

Joseph W. Fleming, 8381 Post Rd., Allison Park, Pa. 15101

Filed May 29, 1992, Ser. No. 890,718

Int. Cl.[5] B09B *1/00;* C02F *11/02*

U.S. Cl. 405—128 42 Claims

1. A method for decontaminating soil contaminated with toxic radicals or compounds containing a higher valence state metal, said method comprising the steps of:

a) introducing a non-biological composition for treating toxic radicals or reducing the valence of the higher valence metal into a body of water which is adjacent to a contaminated soil site;

b) moving a portion of contaminated soil located along a first side of said body of water into said body of water;

c) permitting said composition for reducing the valence of high valence metals to reduce the valence of said higher valence metal in said portion of contaminated soil in order to form a portion of decontaminated soil;

d) moving said portion of decontaminated soil to a second side of said body of water to form shore material of decontaminated soil at said second side; and

e) repeating steps (b) through (d) until substantially all portions of contaminated soil are decontaminated by said composition for reducing the valence of higher valence metals.

5,192,164

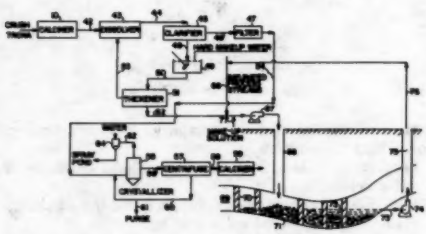
SODA ASH PRODUCTION

William R. Frint; Michael M. Bithell, and William G. Fischer, all of Green River, Wyo., assignors to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 574,837, Aug. 29, 1990, Pat. No. 5,043,149. This application Jul. 25, 1991, Ser. No. 735,586

Int. Cl.[5] B09B *3/00*; E02D *15/00*

U.S. Cl. 405—128 **6 Claims**



1. Process for disposal of insoluble tailings underground, said tailings being derived from insolubles that remain when solubilizing uncalcined or calcined trona in the process of producing soda ash, comprising slurrying the tailings with a saturated or substantially saturated aqueous solution of a salt selected from sodium carbonate, sodium bicarbonate and mixtures thereof, pumping said slurry into a well connected to an underground mined-out cavity in a trona bed with sufficient pressure to prevent build-up of tailings from plugging the bottom of the well opening, continuing to pump said tailings slurry into said cavity, dispersing and settling said tailings along with a retained portion of said aqueous solution in said cavity, removing aqueous solution from said cavity and conveying it to the surface, recovering the removed aqueous solution from said cavity for recycle and slurrying additional tailings, and adding as make-up liquor to replace the retained portion of solution in said cavity a saturated or substantially saturated aqueous solution of a salt selected from the group of sodium carbonate, sodium bicarbonate and mixtures thereof.

5,192,165

TRENCHLESS REPLACEMENT OF CONDUITS IN AN UNDERGROUND CONDUIT BANK

Robert J. Torielli, Piscataway, N.J., assignor to PIM Corporation, Piscataway, N.J.

Filed Apr. 6, 1992, Ser. No. 864,358

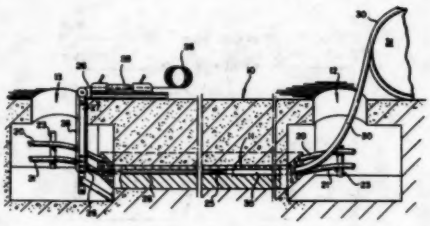
Int. Cl.[5] F16L *55/18*

U.S. Cl. 405—156 **4 Claims**

1. In a conduit bank of the type having a plurality of individual conduits packed together and extending for an extended distance underground, a method of replacing only one of the individual conduits of the bank while leaving the other individual conduits operable, comprising the steps of:

moving into the individual conduit a front end of a conduit expander, which front end is narrow enough to enter one end of the individual conduit, which conduit expander also has an enlarged portion rearwardly of that front portion, the enlarged portion having its largest outside diameter being greater than the original inside diameter of the existing individual conduit,

moving the conduit expander through the existing individual conduit, breaking the existing individual conduit and causing the enlarged portion to move the broken individual conduit outwardly by an amount which does not damage the adjacent other individual conduits of the bank, and



moving into the individual conduit a replacement conduit which is attached to the conduit expander and which has an internal diameter at least approximately equal to the original inside diameter of the existing individual conduit.

5,192,166

METHOD OF CONTROLLED BENDING OF A PIPELINE DURING LAYING THEREOF IN THE SEA

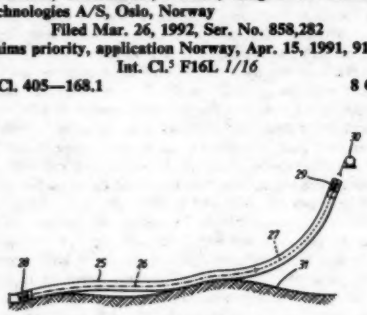
Tor Persson, Kristianstad, Sweden, assignor to International Technologies A/S, Oslo, Norway

Filed Mar. 26, 1992, Ser. No. 858,282

Claims priority, application Norway, Apr. 15, 1991, 911464

Int. Cl.[5] F16L *1/16*

U.S. Cl. 405—168.1 **8 Claims**



1. A method of controlled bending of an empty pipeline during the laying thereof on a bed in the sea, said method comprising the steps of;

locating and engaging a bend controlling/stopping means for limiting said controlled bending of said pipeline to a predetermined angular configuration on an exterior of said empty pipeline at a selected bending zone of said pipeline on said bed,

transporting weight-loaded means for bending by weight said empty pipeline along an interior of said empty pipeline to said selected bending zone of said empty pipeline on said bed,

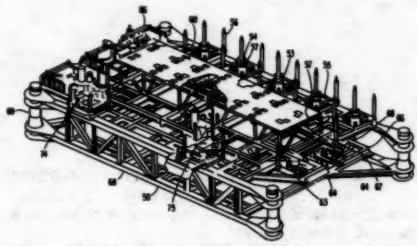
wherein weight of said weight-load means permanently bends said empty pipeline to a predetermined angular configuration in cooperation with said bend controlling/-stopping means and said bed.

5,192,167

SUBSEA PRODUCTION SYSTEM

José E. M. da Silva; Cezar A. S. Paulo; Amauri G. Santos Filho, and Eduardo J. J. Coelho, all of Rio de Janeiro, Brazil, assignors to Petroleo Brasileiro S.A.-Petrobras, Rio de Janeiro, Brazil

Filed Oct. 15, 1991, Ser. No. 776,641
Claims priority, application Brazil, Oct. 12, 1990, PI 9005123
Int. Cl.[5] E02B *17/00*
U.S. Cl. 405—195.1 20 Claims



1. A subsea production system comprising: a template structure, a manifold structure, means for mounting said manifold structure to said template structure, a plurality of wet christmas tree modules, a plurality of satellite tree modules, said manifold structure containing pipes, control lines, check valves for said pipes and connectors, said template structure comprising means for detachably mounting said plurality of wet christmas tree modules and said plurality of satellite tree modules adjacent said manifold and about the perimeter of said template structure, and wherein said wet christmas tree modules and said satellite tree modules comprise at least one maneuver valve, choke, control module and transducer constituting active components of the subsea production system such that the subsea production system may be utilized in deep waters, offer a high operational flexibility while allowing the active components of the system within the detachably mounted christmas tree and satellite tree modules to be serviced at the surface of the sea after removal from the subsea production system template structure.

5,192,168

METHOD AND APPARATUS FOR STABILIZING FRICTION SOIL AND ADJACENT COHESION SOIL LAYERS

Karl R. Massarsch, Waterloo, Belgium, and Günter Heppel, Marburg an der Lahn, Fed. Rep. of Germany, assignors to Dr.-Ing. Ludwig Muller & Sohne Gesellschaft fur Bautechnik mbH & Co. KG, Marburg an der Lahn, Fed. Rep. of Germany

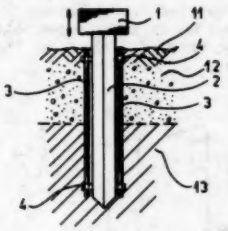
Filed Apr. 30, 1992, Ser. No. 876,232
Claims priority, application Fed. Rep. of Germany, May 1, 1991, 4114193
Int. Cl.[5] E02D *7/18*
U.S. Cl. 405—258 14 Claims

1. A method of stabilizing friction soils and adjacent cohesion soil layers, comprising the steps of:

(a) affixing to a compaction beam at least one ground nail in a form of an elongated rod;

(b) vibrating said beam with said ground nail affixed thereto into the ground through said friction soil and an adjacent cohesion soil layer with a vibrator attached to an upper end of said beam; and

(c) thereafter withdrawing said beam from the ground while vibrating said beam and leaving said ground nail in the ground after extraction of said beam whereby said ground



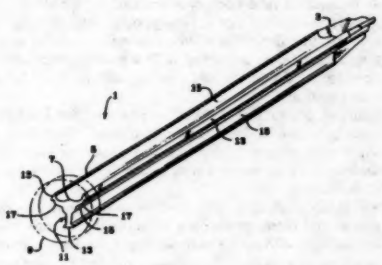
nail transfixes the friction soil and at least a portion of a cohesion soil layer.

5,192,169

FRICTION ROCK STABILIZER

Thomas J. Landsberg, Princeton, N.J., assignor to Simmons-Rand Company, Bristol, Va.

Filed Nov. 12, 1991, Ser. No. 790,626
Int. Cl.[5] E21D *21/00*
U.S. Cl. 405—259.1 11 Claims



1. A friction rock stabilizer, for use in a borehole having a longitudinal center axis and a substantially circular cross section transverse to said center axis, comprising:

a. an elongated, nondeformable center spine having a top end and a bottom end, said nondeformable spine adapted to extend within said borehole adjacent to said longitudinal center axis;

b. support arm means extending transversely outwardly from said nondeformable spine, for exerting a radial force outwardly from said center axis toward a borehole wall, for urging at least three spaced-apart friction surfaces into contact with the borehole wall, said friction surfaces having therebetween a portion of said nondeformable spine spaced from the borehole wall, when said stabilizer is positioned within the borehole;

c. said friction surfaces being positioned on an arc of a circle measured around said center axis, said arc spanning a center angle of at least 180 degrees;

d. said support arm means extending longitudinally along said nondeformable spine; and

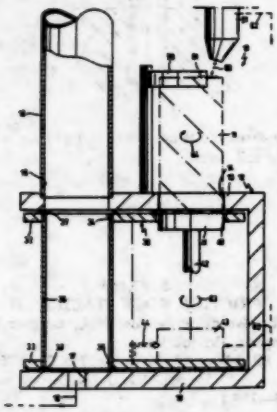
e. compression means on said support arm means for permitting resilient compression of said support arm means and for transmitting compressive stress in a radial direction between said friction surfaces and said nondeformable spine, during insertion of said stabilizer into an undersized borehole.

5,192,170

PNEUMATIC TUBE CONVEYOR STATION

Hartmut Lang, Plochingen, Fed. Rep. of Germany, assignor to Infotronic Vertriebsgesellschaft fuer Kommunikationssysteme mbH, Plochingen, Fed. Rep. of Germany

Filed Sep. 18, 1991, Ser. No. 761,681
Int. Cl.[5] B65G 51/28, 51/44, 51/36
U.S. Cl. 406—147 5 Claims



1. A pneumatic tube conveyor station, comprising:

a conveyor case for conveying goods between said station and another station of a tube conveyor system, said conveyor case being provided with a machine-readable label bearing identification and routing information about said other station;

a housing comprising a loading position for loading said conveyor case to be dispatched to said other station and supporting means for placing said conveyor case thereon, said supporting means being rotatable under the action of drive means; and

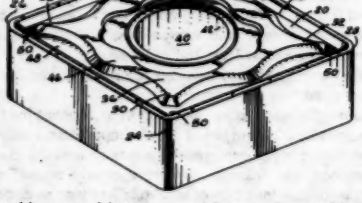
label reading means arranged adjacent said supporting means and being connected to said drive means for reading said identification and routing information from said label when said conveyor case is rotated by said supporting means.

5,192,171

CHIP CONTROL INSERT

James Ther, Troy; Brendan L. Brockett, Dearborn Heights, and John H. Patterson, Hazel Park, all of Mich., assignors to GTE Valenite Corporation, Troy, Mich.

Filed Jan. 7, 1991, Ser. No. 638,236
Int. Cl.[5] B23B 27/22, 27/16
U.S. Cl. 407—114 8 Claims



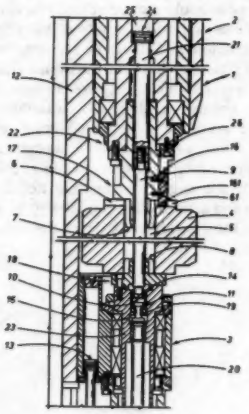
1. A chip control insert comprising a polygon side cutting edge periphery, an inclined entry surface descending from said periphery to bottom surface, a planar annular seating surface projecting from said bottom surface above said periphery, polygon corner chip breaking means, said seating surface having a surrounding ramp wall, ascending from said bottom surface above said periphery, said annular seating surface having radius bulges intermediate each polygon side, a central through aperture, and a substantial area planar recess surrounding said aperture within said seating surface.

5,192,172

GEAR HOBBING MACHINE WITH ARBORLESS SUPPORT FOR HOB

Alessandro Lanazzi, Bologna, Italy, assignor to Mikron S.p.A. Bologna, Bologna, Italy

Filed May 26, 1992, Ser. No. 889,046
Claims priority, application Italy, May 31, 1991, B091A000189
Int. Cl.[5] B21F 23/12
U.S. Cl. 409—11 5 Claims



1. A gear hobbing machine, comprising:

a pair of coaxial heads, the first head capable of movement along its own axis toward and away from the second head, between and by which a hob having an axial bore is supported coaxially, said hob set in rotation bout the common axis of the coaxial heads;

a first timing member disposed on one of the two heads;

a second timing member disposed on the hob and interacting with the first timing member;

a pair of axially hollow alignment spigots with respective stop collars, associated one with each of the heads and said spigots insertable in the axial bore of the hob to a depth at which the collars engage the hob;

a tension rod coaxially disposed in at least one of the heads and having a free end, insertable through one of the spigots and through the hob, and

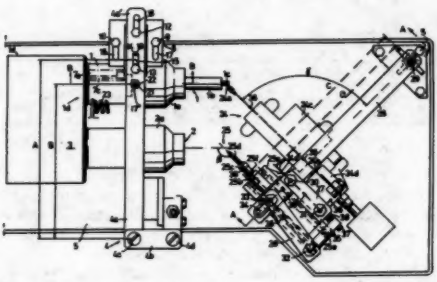
gripping and tensioning means for engaging and restraining the tension rod to cause a force of axial compression to be applied through the spigots to the hob, said gripping and tensioning means disposed on the remaining head.

5,192,173

COPYING METHOD AND DEVICE

Matts Andersson, Fåker, and Värne Gustavsson, Karlskoga, both of Sweden, assignors to Nobelpharma AB, Gothenburg, Sweden

Filed Feb. 23, 1990, Ser. No. 483,725
Claims priority, application Sweden, Feb. 23, 1989, 8900621
Int. Cl.[5] B23Q 35/10
U.S. Cl. 409—84 7 Claims



1. A method for producing an article from a blank, the contour of the article being altered with respect to a selected model by using a copying machine including a first pair of units having a first unit for supporting the model and a second unit for supporting the blank and a second pair of units including a third unit for supporting a detecting member, and a fourth unit for supporting a machining member, said method comprising the steps of:

1) controlling said units of said first and second pair for execution of first relative longitudinal displacement movements of said pairs of units towards and way from each other such that said detecting member is brought in cooperation with the model for detecting its contour and the machining member is brought into contact for working upon the blank;

2) controlling one of said first and second units in said first pair by a first linkage system associated with said first pair such that the other of said first and second units executes second displacement movements with respect to the one unit to provide a desired alteration of the article contour in the longitudinal direction;

3) controlling one of said third and fourth units in said second pair by a second linkage system associated with said second pair such that the other of said third and fourth units executes second displacement movements with respect to the one unit to provide a desired alteration of the article contour in the radial direction; and

4) wherein said units are positioned such that longitudinal axes of said first and third unit relative to said second and fourth unit respectively are at an angle with respect to each other.

5,192,174

HYDRAULIC DRIVE FOR A TOOL HEAD

Hans Hartmann, Emser Strasse 14, D-7000 Stuttgart 50, Fed. Rep. of Germany

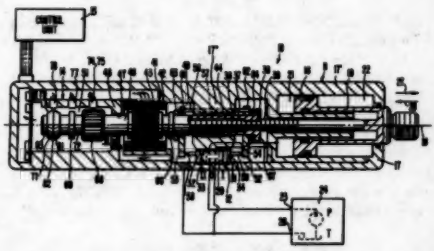
PCT No. PCT/DE90/00319, § 371 Date Jan. 7, 1992, § 102(e) Date Jan. 7, 1992, PCT Pub. No. WO90/13747, PCT Pub. Date Nov. 15, 1990
PCT Filed May 4, 1990, Ser. No. 777,226
Claims priority, application Fed. Rep. of Germany, May 7, 1989, 3914860
Int. Cl.[5] B23Q 5/36; F15B 9/00
U.S. Cl. 409—283 12 Claims

1. A hydraulic drive for adjustment, feed, and return movements of a toolhead of a machine tool, the hydraulic drive comprising:

a hydraulic motor including a movable drive element fixedly coupled to the toolhead, said drive element being drivable by alternative pressurization and pressure relief of drive pressure chambers in accordance with tool movements;

a follow-up control valve operating in response to an electromechanically controllable reference position value setting for the movable drive element and mechanical actual position value return indication;

means for setting a reference position value and return indication of an actual position value including a threaded spindle and a spindle nut fashioned as a hollow shaft and meshing with a thread of the spindle, one of the threaded spindle and the spindle nut forming a reference value setting element, one of the threaded spindle and spindle nut being adapted to be driven by an electric motor in a direction of rotation of the electric motor in accordance with a setting of the reference position value, and the



other of the threaded spindle and spindle nut being adapted to be axially displaced by a drive element in accordance with an actual position value return indication;

an electronic control unit provided with an interface for an NC or a CNC control for producing signals required for motion control of the electric motor;

a rotational and angular position pickup system for producing output signals containing information relating to a total number of revolutions by the reference value setting element as well as the azimuthal position of the reference value setting element within each revolution; and

an electronic displacement pickup system providing output signals which constitutes a direct measure for axial deflections of the reference value setting element and a valve operating member of the follow-up control valve also executing these axial deflections from a rest position and providing a measure for the lag error by which at lest one of the toolhead or the drive element of the hydraulic motor trails with respect to a reference position.

5,192,175

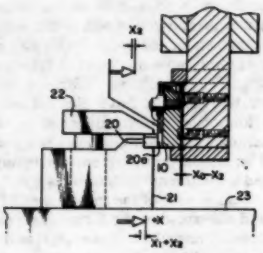
BURR TRIMMING METHOD AND APPARATUS FOR MACHINING SHOCK TESTING PIECES, AND AUTOMATIC MACHINING SYSTEM THEREOF

Morio Oosawa, Ibaraki; Takeo Ikeda, Hitachi; Yuji Nezu, Hitachi, and Yosio Kamijyo, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 23, 1989, Ser. No. 370,867
Claims priority, application Japan, Jul. 6, 1988, 63-166762
Int. Cl.[5] B23D 13/00
U.S. Cl. 409—345 15 Claims

1. A tool adapted for trimming burrs formed on an edge of a groove machined in a testing piece, the tool comprising: a body including supporting means having a cushion mechanism; a holder supported on one surface of said body by said supporting means; and a cutting edge fixedly mounted to said holder so as to enable the cutting edge to be pressed against a surface of

the testing piece where the burrs have formed and in this condition enable a substantially linear movement of the current



edge along said surface of the testing piece to trim off the burrs.

5,192,176

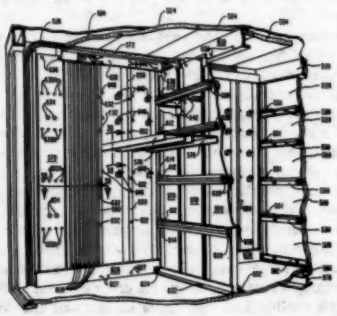
SECTIONAL VAN TRAILER HAVING DETACHABLE, INTERCHANGEABLE COMPARTMENTS CAPABLE OF FORMING A CONTINUOUS VAN BODY WITH ACCOMPANYING SYSTEM FOR FORMING SHELF DECKS AND PARTITION WALLS WITHIN CARGO HOLDING SECTIONS

Hardy G. Roberts, Orem, Utah, assignor to T-W Management Company, Orem, Utah

Continuation of Ser. No. 460,655, Jan. 3, 1990, abandoned, which is a continuation-in-part of Ser. No. 296,575, Jan. 12, 1989, abandoned. This application Jul. 10, 1991, Ser. No. 727,274

Int. Cl.[5] B61D *45/00*; B60P *1/00*

U.S. Cl. 410—140 **7 Claims**



1. A system for constructing removable horizontal decks and vertical partitions for use in a cargo holding section having at least two walls, the system comprising:

a plurality of planar units, wherein each of the planar units includes means for supporting objects thereon when the planar unit is oriented in a substantially horizontal position;

means for storing each of the plurality of the planar units, wherein said means for storing is formed within the cargo holding section and is formed within at least one wall of said two walls;

means for removably supporting the plurality of the planar units between said two walls of the cargo holding section to form at least one of said removable horizontal decks; and

means for removably holding the plurality of the planar units in at least one vertical position within the cargo holding section to form at least one of said removable vertical partitions.

5,192,177

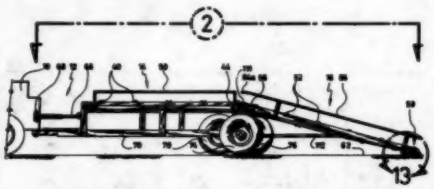
MOBILE HARVESTER FOR HAY BALES

Marcel E. Cardinal, 5451, Rg. St-Vincent, Mirabel, Quebec, Canada J0N 1K0

Filed Apr. 13, 1992, Ser. No. 867,452

Int. Cl.[5] B60P *1/38*

U.S. Cl. 414—501 **8 Claims**



1. A mobile harvester movable on a ground surface for receiving, loading and unloading hay bales, comprising,

an elongated bale receiving platform on which successive and adjacent bales, sidewisely positioned are adapted to longitudinally slide thereon in a single row,

a loading platform adjacently positioned sidewise relative to said receiving platform, said loading platform being substantially at the same level as the receiving platform,

means for pivoting said receiving platform for tilting a row of aligned bales on said receiving platform onto said loading platform, wherein a preceding row of aligned bales are adapted to be pushed transversally onto said loading platform when a following row of aligned bales is tilted on the loading platform, said loading platform having a supporting surface for said bales comprising a first conveyor mechanism for longitudinally moving said bales onto said supporting surface,

first means for actuating said first conveyor mechanism,

an unloading platform adjacently positioned lengthwise relative to said loading platform for receiving the bales from said loading platform when said first conveyor mechanism is moving, said unloading platform having a supporting surface comprising a second conveyor mechanism for consecutively moving said bales longitudinally to an end of said unloading platform opposite said loading platform,

second means for actuating said second conveyor mechanism,

said unloading platform leaning backwardly relative to the surface of the loading platform, said unloading platform having a skate member located at said opposite end under said unloading platform, said skate member adapted to slide on the ground surface when the harvester is moving,

whereby said opposite end is adapted to lie at a level adjacent the ground to allow the bales to smoothly slide onto the ground when the second conveyor mechanism is actuated.

5,192,178

EXTENSIBLE DISCHARGE CHUTE ASSEMBLY

Frederick J. Silbernagel, 4007 Fontana Dr., Oklahoma City, Okla. 73116

Filed May 2, 1991, Ser. No. 694,751

Int. Cl.[5] B65G *11/12*

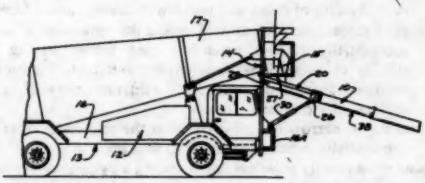
U.S. Cl. 414—523 **20 Claims**

1. A discharge chute assembly for discharging material from a discharge apparatus having a storage reservoir, the discharge chute assembly comprising a first discharge chute section for receiving the material from the reservoir:

a second chute section comprising a trough-shaped body extending longitudinally between a second inlet end and a second outlet end and having spaced upper edges, means

to couple the inlet end to the first chute section to receive materials from the first chute section;

a third chute section comprising a body of complemental cross-sectional shapes to the second chute section and being of larger size so as to telescopically slide over the second chute section and moveable to extend outwardly from the second chute section and having a pair of edges extending longitudinally between a third inlet end and a third outlet end; and



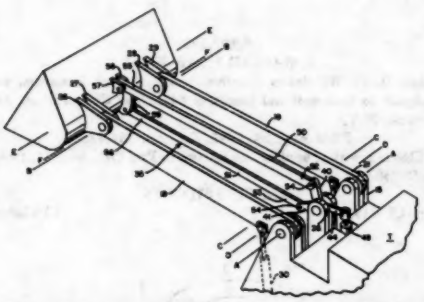
fastening means connecting the third inlet end to the second outlet end for pivotable movement of the third chute section with respect to the second chute section, and permitting detachably disconnecting the third inlet end from the second outlet end for telescopically sliding movement of the third chute section relative to the second chute section.

5,192,179

LIFT ARM AND TILT LINKAGE SYSTEMS FOR LOAD ELEVATING VEHICLES

Geza Kovacs, 1102 Sugartree Dr. S., Lakeland, Fla. 33813

Filed May 24, 1991, Ser. No. 705,581
Int. Cl.[5] E02F 3/34
U.S. Cl. 414—710 **20 Claims**



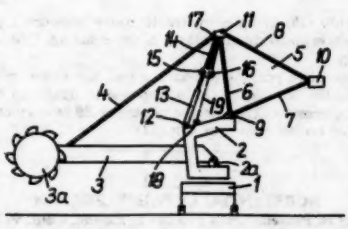
17. In a linkage assembly for self-levelling of an implement relative to a vehicle having a lift arm assembly having one end pivotably mounted to the vehicle about a first pivot axis and a second end pivotably mounted to the implement about a second pivot axis and wherein the first and second pivot axis are generally parallel with respect to one another, the improvement comprising, an implement tilt assembly including two generally parallel link means having first and second ends, said implement tilt assembly further including first and second arm means mounted to the vehicle and having inner and outer end portions, means for mounting said inner end portions of said first and second arm means so as to be selectively rotatable about said first pivot axis, said outer end portions of said first and second arm means being disposed in angular relationship with respect to one another relative to said first pivot axis, a first pivot means for pivotably connecting said first end of one of said parallel link means to said first arm means and a second pivot means for pivotably connecting said first end of the other of said parallel link means to said outer end portion of said second arm means, a third pivot means for pivotably connecting said second end of said one of said parallel link means to said implement and a fourth pivot means for pivotably connecting said second end of said other of said parallel link means to said implement, said third and fourth pivot means being spaced from one another and said second pivot axis, and means for selectively rotating said first and second arm means relative to said first pivot axis.

5,192,180

LOAD-RELIEVING DEVICE FOR SERVOMOTORS ADJUSTING THE HEIGHT OF CANTILEVER ARMS

Horst Kolleth, Krefeld, Fed. Rep. of Germany, assignor to Krupp Industrietechnik Gesellschaft mit beschränkter Haftung, Duisburg, Fed. Rep. of Germany

Filed Dec. 13, 1991, Ser. No. 806,316
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1990, 4039973
Int. Cl.[5] B66C 3/20
U.S. Cl. 414—719 **4 Claims**



1. In an apparatus including a frame, a cantilever arm movably mounted on the frame, counterweight means connected to said frame for counterbalancing said frame and said cantilever arm, and a servomotor connected to the frame and the cantilever arm for setting a height position of the cantilever arm; said servomotor being connected to the frame and the cantilever arm such that tension loads derived from forces acting on the cantilever arm are being introduced into the servomotor; a device for relieving the servomotor of the tension loads for an arbitrary period; said device including a tension member attached parallel to the servomotor for the arbitrary period; the improvement wherein said device comprises an intermediate member having a first pivot joint operatively articulated to said cantilever arm for introducing the tension loads into said intermediate member, a second pivot joint for being coupled to an end of said tension member and a third pivot joint for being releasably coupled to said servomotor; said first, second and third pivot joints being spaced from one another and forming the three corners of an imaginary triangle.

5,192,181

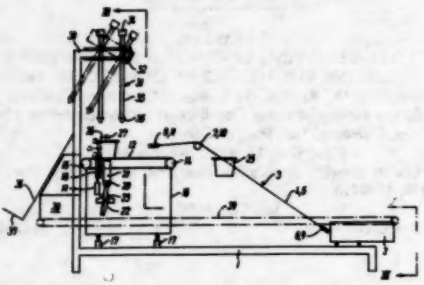
MACHINE FOR STACKING CUP-SHAPED CONTAINERS

Bent Bryde-Hansen, No. 13 Knudsvej, DK-4623 Lt. Skensved, Denmark

Filed Sep. 3, 1991, Ser. No. 753,573
Claims priority, application Denmark, Apr. 23, 1991, 743/91
Int. Cl.[5] B65G 57/30
U.S. Cl. 414—795.3 **11 Claims**

1. A machine for stacking cup-shaped containers (25), comprising: an oscillating chute (2) and a conveyor (3) feeding the containers in an upright position to a height-adjustable conveyor belt (12), a plurality of photosensors (27) to detect, in connection with a programmable control unit, the orientation of a container on the conveyor belt (12), a stop (18) to halt a container under a stack holder (31) which at its downwards facing end has releasable grippers (35), a vertically displaceable stack disc (20) for lifting said container to the stack holder, and means (39) for returning an incorrectly oriented container to the oscillating chute,

wherein the stack holder (31), the stop (18) and the stack disc (20) are positioned relative to a point on the height-adjustable conveyor belt (12) at which the orientation of the container (15) is detected by said photosensors (27) immediately prior to stacking.



said stop (18) being activated to move between a passive position allowing movement of the container (25) past the stop

and an active position preventing said movement and stopping the container (25) in response to detection by said photosensors (27) that the container 25 is correctly oriented on the conveyor belt (12).

5,192,182

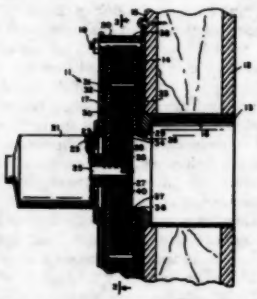
SUBSTANTIALLY NOISELESS FAN

Clarence R. Possell, 11618 Placid Ct., Colton, Calif. 92324

Filed Sep. 20, 1991, Ser. No. 763,258

Int. Cl.[5] F01D *1/36*

U.S. Cl. 415—90 **1 Claim**



1. A substantially noiseless fan for moving air comprising;

a first housing part forming a first wall;

a second housing part forming a second wall;

means on said first housing part supporting said second housing part with said second wall in spaced relationship with said first wall to form a partial enclosure which is open at its periphery to the atmosphere;

a rotatable drive shaft;

bearing means rotatably supporting said drive shaft partially within said partial enclosure;

a first disk in said partial enclosure carried by said shaft;

a second disk in said partial enclosure having a central opening therein;

a plurality of disks, each with a central opening therein of the same size, positioned in parallel relationship with the first and second disks;

said second housing part having an air intake opening coaxial with said central opening in said second disk;

said second housing part including a substantially tubular extension sized to slidingly extend through a receptive cylindrical opening in a structure wall, said substantially tubular extension comprising an air intake conduit terminating coaxially with said central opening;

said tubular extension having an annular lip extending within said air intake opening in said second housing part;

the central openings in said second disk and in said plurality of disks being all round openings of substantially the same diameter;

the inside diameter of said annular lip being substantially the same as the diameter of each of the central openings in said plurality of disks, and said fan including means forming a throat intermediate said lip and the remainder of said substantially tubular extension, said throat having a smaller cross sectional area throughout than the cross sectional area of the interior of said remainder of said substantially tubular extension;

said throat narrowing convexly from the remainder of said substantially tubular extension to said lip;

said substantially noiseless fan including a cylindrical screen encircling said first disk, said second disk and said plurality of disks spaced outwardly therefrom between said first wall and said second wall; and

means supporting said second disk and said plurality of disks in spaced parallel and rotational relationship with said first disk and each other whereby when the disks are rotated at a suitable speed bodies of air in the spaces therebetween are rotated due to boundary layers of the air on the facing sides of said disks and portions of said bodies of air are sheared from said boundary layers and moved radially outward in spiral paths by centrifugal force created by said rotation.

5,192,183

LAMINAR FLOW FANS

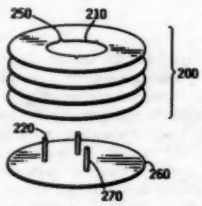
Philip R. C. Wilkinson, Southhampton, United Kingdom, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 28, 1991, Ser. No. 751,425

Claims priority, application European Pat. Off., Sep. 11, 1990, 90309938.0

Int. Cl.[5] F01D *1/36*

U.S. Cl. 415—90 **13 Claims**



1. A laminar flow fan comprising:

a plurality of fan elements, each having a central aperture therein; and

a support member passing through the central aperture in each element, wherein relative rotation of the support member from a first position to a second position with respect to the fan elements fastens the support member to an aperture edge in each element, thereby maintaining the support member and elements in the second relative position.

5,192,184

FUEL FEED PUMP

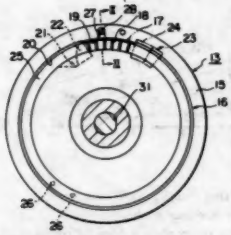
Yamada Nobuo, Kiryu, and Keiji Kiuchi, Yabuzuka-honmachi, both of Japan, assignors to Mitsuba Electric Manufacturing Co., Ltd., Gunma, Japan

Continuation of Ser. No. 717,925, Jun. 20, 1991, abandoned. This application Jun. 3, 1992, Ser. No. 893,608

Claims priority, application Japan, Jun. 22, 1990, 2-164770; Jun. 29, 1990, 2-69052[U]

Int. Cl.[5] F04D 5/00

U.S. Cl. 415—169.1 5 Claims



1. A fuel feed pump comprising:

a casing immersed in a fuel tank for a motor vehicle, said casing comprising a pump head and a pump plate;

an impeller rotatably installed in the casing and provided on the outer peripheries thereof with a plurality of grooves;

a liquid sealing portion formed in a position close to the impeller rotating loci of a group of the grooves of the impeller in the casing;

an intake port and a discharge port respectively opened in positions interposing the liquid sealing portion in the circumferential direction in the casing, the intake port being provided in the pump head and the discharge port in the pump plate;

a generally annular groove path formed between the intake port and the discharge port in a zone excluding the liquid sealing portion of the casing;

a deairing hole disposed in said groove path in the pump head; and

an exhaust port formed having a length substantially equal to said impeller's thickness and opened in the intermediate portion of the liquid sealing portion in a manner to communicate with an inner space of the liquid sealing portion and with the outside of the casing through said pump head to environmental pressure whereby said exhaust port is at a pressure level of the outside of the casing said pressure level being lower than a discharge pressure at said discharge port.

5,192,185

SHROUD LINERS

John F. Leonard, Bristol, England, assignor to Rolls-Royce plc, London, England

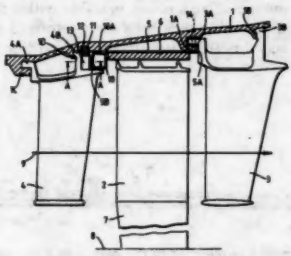
Filed Oct. 30, 1991, Ser. No. 785,013

Claims priority, application United Kingdom, Nov. 1, 1990, 9023880

Int. Cl.[5] F01D 5/00

U.S. Cl. 415—170.1 2 Claims

1. A shroud liner for use in a gas turbine, the turbine including a casing and a first set of stator vanes and a second set of stator vanes; the shroud liner being formed of sheet metal bearing an abradable coating on a part of one face, the shroud liner having a first portion at a downstream end thereto and a second resilient portion at its upstream end thereto, the first portion being shaped to fit between the first set of vanes and the casing, the resilient second portion comprising the sheet metal of the shroud liner formed in a U shape to fit between the second set of vanes and the casing, and a resilient element which closes the open end of the U shape, said first and second portions being arranged so that, in operation, gas loads on the vanes compress the first and second portions between the vanes and the casing so that the first portion is held between



the first set of vanes and the casing while the second resilient portion is compressed between the second set of vanes and the casing but able to move relative thereto.

5,192,186

GAS TURBINE ENGINE

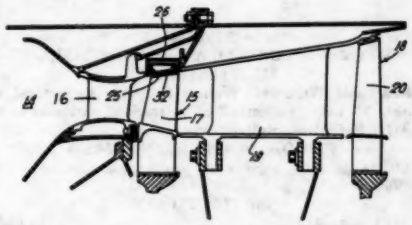
John H. R. Sadler, Derby, United Kingdom, assignor to Rolls-Royce plc, London, England

Continuation of Ser. No. 295,320, Jul. 31, 1981, abandoned. This application Nov. 20, 1984, Ser. No. 699,446

Claims priority, application United Kingdom, Oct. 3, 1980, 8031989

Int. Cl.[5] F01D 25/08

U.S. Cl. 415—177 8 Claims



1. A shroud ring suitable for a turbine of a gas turbine engine, said shroud ring comprising:

an annular surface defining means having an annular radially inwardly facing surface;

an annular heat pipe positioned radially outwardly of said annular surface defining means; and

spacing means positioned to radially space apart at least a major portion of said annular heat pipe from said annular surface defining means and defining an annular thermal barrier between said at least major portion of said heat pipe and said surface defining means.

5,192,187

ADJUSTABLE LOAD BRACING CROSSBAR

Lawrence H. Sweet, Rte. 6, Box 432-S, Mooresville, N.C. 28115

Filed Oct. 23, 1991, Ser. No. 780,636

Int. Cl.[5] B61D 45/00

U.S. Cl. 410—151 12 Claims

1. An adjustable load bracing crossbar comprising

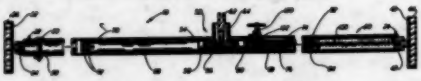
an elongate, substantially hollow support body having opposing ends,

means positioned at one end of the support body for engaging a wall of a compartment,

a telescoping extension tube slidably received within the other end of the support body and including an end por-

tion projecting from the tube and adapted for engaging another side wall of the compartment, and

a hydraulic pump mechanism secured within the support body and including a piston movable within the telescoping wall-engaging tube between a retracted position and an extended position toward the end portion of the tube, and



biasing means connected to the piston and the end portion of the telescoping tube for creating a biasing force between the piston in its extended position and telescoping tube when the crossbar is mounted within the compartment to compensate for slack created between the end portion and compartment wall such as occurs when the compartment is in transit.

5,192,188

LOCK FOR THE LOADING AND/OR DISCHARGING OF BULK MATERIALS

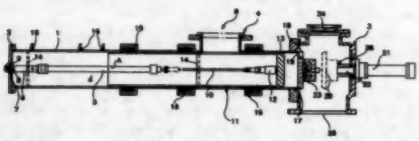
Alfred Kunz, Witterswil; Walther Schwenk, Kaiseraugst, and Jörg M. List, Pratteln, all of Switzerland, assignors to List AG, CH-Pratteln, Switzerland

Filed Dec. 10, 1990, Ser. No. 624,583

Claims priority, application Switzerland, Dec. 22, 1989, 04-588/89

Int. Cl.[5] C10J *3/30*

U.S. Cl. 414—217 **10 Claims**



1. A lock for the loading and/or discharging of, in particular, not easily flowing, adhering bulk materials into or out of a pressurized or vacuum chamber through a discharge opening of a discharge housing, comprises a housing having an inlet connector adjoining an operating chamber and a piston guided in the housing, a movable piston for transporting the bulk material from the inlet connector to a discharge housing, wherein the discharge housing is closed off in relation to the housing by a valve wherein the piston is guided by a sealing arrangement and is movable from one end position on one side of the inlet connector wherein the piston is sealed and exposes the inlet connector for receiving bulk material into the housing to the other end position on the other side of the inlet connector wherein the piston is sealed and the valve is opened for discharging bulk material into the discharge housing and thereafter to an intermediate position between the end positions wherein the valve closes.

5,192,189

CAR CARRIER TRUCK USED ALSO AS DUMP TRUCK

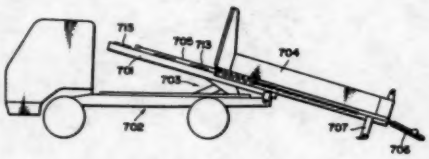
Masaichi Murata; Hiroaki Kuriyama; Yoshiyuki Maeda; Megumi Yamashita, and Kouzou Ueda, all of Hyogo, Japan, assignors to Kyokuto Kaihatsu Kogyo Co., Ltd., Hyogo, Japan

PCT No. PCT/JP89/00116, § 371 Date Sep. 18, 1990, § 102(e) Date Sep. 18, 1990

PCT Filed Feb. 3, 1989, Ser. No. 573,131

Int. Cl.[5] B60P *1/32*

U.S. Cl. 414—477 **6 Claims**



1. A car carrier truck, comprising:

a truck body having a chassis;

a dump frame pivotably disposed on said chassis, said dump frame comprising longitudinally extending beams having top and bottom surfaces;

a tilting device connected between said chassis and said dump frame;

a load carrying platform slidably mounted on said dump frame, said load carrying platform including longitudinally extending main girders having upper, lower and side surfaces and said main girders being slidably engaged with said beams of said dump frame;

a slide device connected between said dump frame and said load carrying platform for sliding said load carrying platform on said dump frame;

moving pads slidable on said beams of said dump frame fixed to said main girders at longitudinally forward positions on said main girders, said moving pads slidably engaging said beams of said dump frame; and

a plurality of fixed pads longitudinally aligned on and fixed to said top surfaces of said beams of said dump frame at intervals along said beams, said main girders being slidably disposed on said fixed pads, and one of said fixed pads at a longitudinally rearward position on each said beam having a side surface projecting laterally from said dump frame and contacting a said side surface of a said main girder.

5,192,190

ENVELOPE FORGED STATIONARY BLADE FOR L-2C ROW

Jurek Ferleger, Longwood, and David H. Evans, Lake Mary, both of Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 624,367, Dec. 6, 1990, abandoned. This application May 8, 1992, Ser. No. 884,268

Int. Cl.[5] F01D *9/04*

U.S. Cl. 415—191 **21 Claims**

1. A stationary blade for mounting in a stream turbine stationary cylinder comprising:

an airfoil portion having an inner diameter end and an outer diameter end;

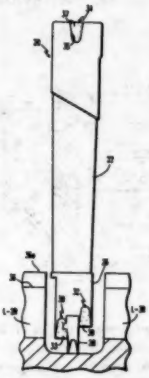
a portion of an inner ring corresponding to the airfoil portion being integrally formed at the inner diameter end of the airfoil portion; and

a portion of an outer ring corresponding to the airfoil portion, being integrally formed at the outer diameter end of the airfoil and being connected to the stationary cylinder of the steam turbine,

the airfoil, inner ring and outer ring portions being one piece,

said blade having a first groove formed in an end surface of the outer ring portion and extending from side to side for receiving weld material when additional blades of the same configuration are grouped together with the outer and inner ring portions juxtaposed side-by-side so that the weld material interconnects the outer ring portions,

said inner ring portion having a stepped end and including a first step surface and a second step surface,



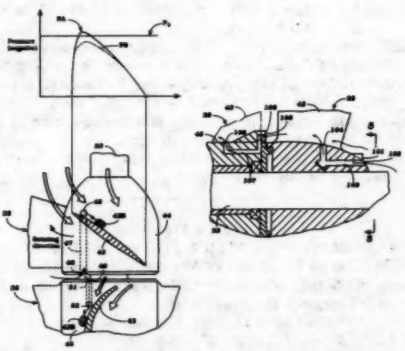
said blade further having second and third grooves formed respectively in the first and second stepped surfaces of the inner ring portion and extending from side to side for receiving weld material when the additional blades of the same configuration are grouped together so that the weld material interconnects the inner ring portions.

5,192,191

PROPELLER VANE STRUCTURE FOR MARINE PROPULSION UNIT

Hiroshi Tasaki, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed May 28, 1991, Ser. No. 706,582
Claims priority, application Japan, May 28, 1990, 2-135347
Int. Cl.[5] B64C *11/24*
U.S. Cl. 416—90 A **38 Claims**



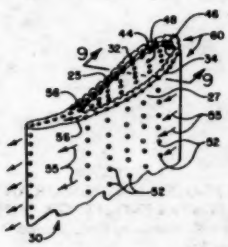
1. A blade construction for positioning in a stream of flowing fluid comprising hub having an outer generally cylindrical surface, at least one blade having a base formed at said cylindrical surface of said hub and a blade portion extending outwardly therefrom into the stream of flow, said blade portion having an upstream side and a downstream side, and a passage for delivering a pressurized flow of fluid to said base on the upstream side of said blade along its leading edge for precluding cavitation.

5,192,192

TURBINE ENGINE FOIL CAP

Tracy R. Ourhaan, Miami, Fla., assignor to The United States of America as represented by The Secretary of the Air Force, Washington, D.C.

Filed Nov. 28, 1990, Ser. No. 619,271
Int. Cl.[5] F01D *5/18*
U.S. Cl. 416—97 R **5 Claims**



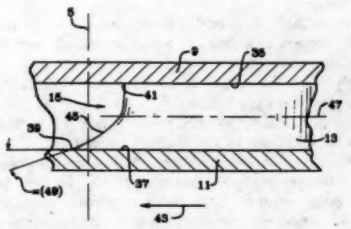
1. In a foil cap for a gas turbine engine for hollow blades or hollow vanes, having blade or vane cooling apertures from inside to outside thereof, which cap has top and outer side surfaces which meet to define outside corners, the improvement comprising, cap cooling apertures located in said cap which include corner apertures which exit at said outside corners at both said top and outer side surfaces at locations on the high and low pressure sides of said cap, wherein said corner, apertures cannot be blocked by contacting said top surfaces with a movable engine member, said top surfaces also intersecting with inside walls to define a ridge having inside corners, which ridge defines an enclosure such that at least some of said corner apertures exit at the outside corners of said ridge while some of said cap apertures exit proximate said inside walls of said ridge so that the outside corners of said ridge are scalloped by said corner apertures and the inside corners of said ridge are scalloped by extensions of said cap apertures.

5,192,193

IMPELLER FOR CENTRIFUGAL PUMPS

Paul Cooper, Titusville, N.J., and Donald P. Sloteman, New Hope, Pa., assignors to Ingersoll-Dresser Pump Company, Liberty Corner, N.J.

Filed Jun. 21, 1991, Ser. No. 719,025
Int. Cl.[5] F04D *29/22, 29/66*
U.S. Cl. 416—186 R **5 Claims**



1. In an impeller for liquid-conveying centrifugal pumps having a front shroud member, a rear hub member, a plurality of vanes therebetween having leading inlet edges disposed at the periphery of a circle, and an inlet throat opening between

a suction side of one vane and a pressure side of an adjacent vane, means for inhibiting cavitation comprising:

(a) each vane including:

(i) a span between said shroud member and said hub member;

(ii) a leading inlet edge having a root portion extending upstream of a tip portion;

(iii) said leading inlet edge forming a concave surface beginning at a location between said tip portion and the mid-point of said span, said concave surface extending upstream to said root portion; and

(iv) a vane thickness upstream of said inlet throat opening greater than a vane thickness downstream of said throat opening.

5,192,194

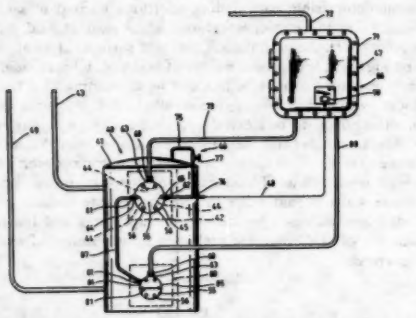
EXPLOSION PROOF COMPRESSOR AND A METHOD FOR EXPLOSION PROOFING A COMPRESSOR

Gaylon W. Birdwell, Houston, Tex., assignor to Air Engineers, Inc., Houston, Tex.

Filed Apr. 23, 1991, Ser. No. 690,045

Int. Cl.[5] F04B *49/02*

U.S. Cl. 417—9 **16 Claims**



1. A compressor for use with air conditioning or refrigeration systems in a hazardous location where flammable gases or vapors may exist, comprising:

a compressor housing;

a compressor motor located within the compressor housing;

a low pressure refrigerant gas inlet line associated with the compressor housing;

electrical supply terminals associated with the compressor housing;

a first gas tight housing for the electrical supply terminals, the first gas tight housing being associated with the compressor housing;

supply means for supplying low pressure refrigerant gas into the first gas tight housing;

a first pressure responsive control means for controlling electrical power to the compressor motor;

a first refrigerant gas pressure line disposed between, and in a fluid-transmitting relationship with, the first gas tight housing and the first pressure responsive control means, whereby upon a pre-selected decrease in pressure in the first gas tight housing, electrical power to the electrical supply terminals is terminated and the flammable gases or vapors are prevented from being ignited by the electrical supply terminals or compressor motor.

5,192,195

SCROLL TYPE COMPRESSOR WITH SEPARATE CONTROL BLOCK

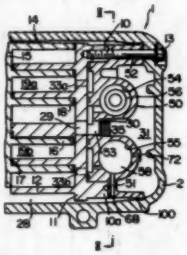
Takayuki Iio, Nishikasugai; Takahisa Hirano, and Yoshiharu Morita, both of Nagoya, all of Japan, assignors to Mitsubishi Jukogoyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 27, 1991, Ser. No. 766,403

Claims priority, application Japan, Nov. 14, 1990, 2-308193; Nov. 16, 1990, 2-311082

Int. Cl.[5] F04B *49/00*

U.S. Cl. 417—299 **5 Claims**



1. A scroll type compressor in which a stationary scroll and a revolving scroll formed by setting up spiral wraps on end plates, respectively, are made to engage with each other while shifting the angle so as to form compression chambers, said stationary scroll is installed fixedly in a housing, and said revolving scroll is made to revolve in a solar motion by means of a mechanism for driving revolution while checking rotation on its axis by a mechanism for checking rotation on its axis, thereby to move said compression chambers toward the center of the spiral while reducing volumes thereof so as to compress gas, thus discharging the compressed gas into a discharge cavity formed in said housing through a discharge port provided in the end plate of said stationary scroll, wherein the scroll type compressor comprises:

bypass ports which communicate with said compression chambers are bored in the end plate of said stationary scroll;

a capacity control block contained inside a bypass passage which has the bypass ports communicate with a suction chamber formed in said housing and a valve mechanism which opens and closes the bypass passage is formed separately from said stationary scroll, the capacity control block is engaged with said stationary scroll and installed fixedly in said housing;

a fitting recessed portion is formed on either one of the outer surface of the end plate of said stationary scroll and the side surface of said capacity control block and a fitting projected portion is formed on the other thereof;

said fitting recessed portion and said fitting projected portion are engaged with each other; and

said stationary scroll and said capacity control block are installed fixedly in said housing.

5,192,196

FLOW CONTROL ORIFICE FOR PARALLEL FLOW FLUID SUPPLY TO POWER STEERING GEAR

Roger W. Gettel, Bloomfield Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 11, 1991, Ser. No. 667,123

Int. Cl.[5] F04B *49/00*

U.S. Cl. 417—300 **14 Claims**

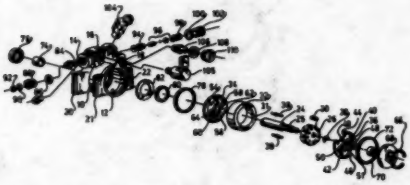
1. A flow control valve for controlling the flow rate of fluid from a fluid pressure source to a load, comprising:

a valve cylinder having a spool slidable therein having first and second pressure surfaces;

an outlet port through which fluid enters said valve cylinder, said outlet port communicating with the discharge

side of the fluid pressure source and the first pressure surface;

a bypass port communicating with the valve cylinder, admitting therethrough fluid from the outlet port, opened and closed to said cylinder as said spool moves in said cylinder;



orifice means hydraulically connecting the outlet port and the load, having an inlet end thereof located eccentric of the longitudinal axis of the valve cylinder adjacent the bypass port and an outlet end thereof connected to the load; and

a pressure feedback passage connecting the outlet end of the orifice means and the second pressure surface.

5,192,197

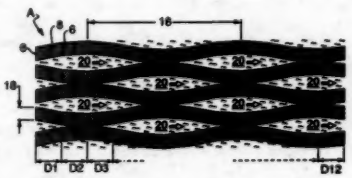
PIEZOELECTRIC PUMP

Gordon W. Culp, Van Nuys, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.

Filed Nov. 27, 1991, Ser. No. 799,525

Int. Cl.[5] F04B *35/04*

U.S. Cl. 417—322 **10 Claims**



9. A pump comprising:

a housing defining a fluid flow-through internal cavity;

at least one flexible waveplate disposed within said housing further comprising shear transducer piezoelectric material planarly electrically segmented with film elecrodes, said electrodes being in a plane perpendicular to fluid flow within said cavity;

a housing fluid inlet communicating with said internal cavity;

a housing fluid outlet communicating with said internal cavity; and

a phased multiple-output controller associated with said waveplate.

5,192,198

DIAPHRAGM PUMP CONSTRUCTION

Gerhard Gebauer, Bermatingen; Wilfried Goes, Meersburg, and Otto Rosenauer, Langenargen, all of Fed. Rep. of Germany, assignors to J. Wagner GmbH, Fed. Rep. of Germany

Filed Aug. 27, 1990, Ser. No. 573,626

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1989, 3928949

Int. Cl.[5] F04B *9/08*

U.S. Cl. 417—383 **41 Claims**

1. A diaphragm pump comprising:

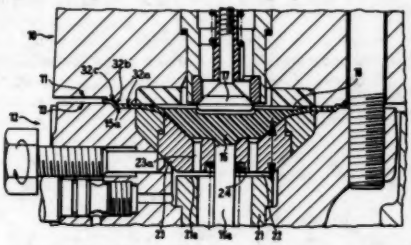
a first compartment means for receiving a first liquid therein and directing said first liquid thereout, said first compartment means having a first surface;

a second compartment means for holding a second liquid therein, said second compartment means having means for exerting a pressure force on said second liquid, said second compartment means comprising a second surface;

said first compartment means mounted to said second compartment means with said first surface facing said second surface; and

a diaphragm located between said first compartment means and said second compartment means, said diaphragm receiving a pressure force from said second liquid and transferring said pressure force across said diaphragm upon said first liquid to cause expulsion of said first liquid from said first compartment means;

wherein said first surface and said second surface each provide a first peripheral region and a second peripheral region, said second peripheral region adjoining and contiguous with said first peripheral region and surrounding said first peripheral region, said second peripheral region angled off in profile from said first peripheral region at a first oblique angle defined as the included acute angle between said first peripheral region and said second peripheral region, said first peripheral regions opposing each other and said second peripheral regions opposing each other, said first peripheral regions and said second peripheral regions cooperating to clamp a peripheral clamping region of said diaphragm residing therebetween, said peripheral clamping region conforming to a shape defined between said opposing first peripheral regions and said opposing second peripheral regions when said first compartment means is mounted to said second compartment means; and



an assembled thickness measured between said first peripheral regions of said first and second surfaces is greater than a thickness measured between said second peripheral regions of said first and second surfaces.

5,192,199

MACHINE FOR A GASEOUS MEDIUM

Hans Olofsson, Huddinge, Sweden, assignor to Svenska Rotor Maskiner AB, Stockholm, Sweden

PCT No. PCT/SE89/00505, § 371 Date Mar. 12, 1991, § 102(e) Date Mar. 12, 1991, PCT Pub. No. WO90/04107, PCT Pub. Date Apr. 19, 1990

PCT Filed Sep. 20, 1989, Ser. No. 663,858

Claims priority, application Sweden, Oct. 11, 1988, 8803595

Int. Cl.[5] F04B *17/00*

U.S. Cl. 417—406 **5 Claims**

1. A machine of the rotary screw type for use with a gaseous medium, the rotary screw type machine having a compression section and an expansion section driving the compression section, said machine further comprising:

one male rotor (14) and one female rotor (16) operating in a single working space having the general shape of two intersecting cylinders and forming said compression and expansion sections for the gaseous medium, each of said rotors (14, 16) being uniform and being provided with

helical lobes (18, 20) and grooves (22, 24) of uniform shape, pitch angle and axial pitch over their entire respective rotor lengths, said rotors (14, 16) intermeshing through said grooves (22, 24) to form chevron-shaped working chambers which in said expansion sections have continuously increasing volume and which in said compression section have continuously decreasing volume; and

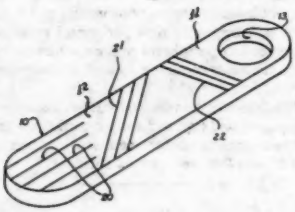
a housing limiting said single working space and having first and second end walls (4, 6) and a barrel wall (2) extending therebetween, one low pressure port (32; 232; 332), one high pressure port (30; 230; 330) and intermediate pressure port means (34; 234; 334, 336).

5,192,200

REED VALVE FOR A HERMETIC COMPRESSOR

Dietmar E. B. Lilie; Jose L. Driessen; Marcio L. Todescat, and Manfred Krueger, all of Joinville, Brazil, assignors to Empresa Brasileira De Compressores S/A-Embraco, Joinville, Brazil

Filed Jun. 7, 1991, Ser. No. 712,900
Claims priority, application Brazil, Jun. 8, 1990, 9002787
Int. Cl.[5] F04B 21/04
U.S. Cl. 417—566 16 Claims



1. The combination comprising:

a compressor having a cylinder and a piston moving therein,

first means attached to said cylinder including at least one gas passage therethrough for communicating with the cylinder, said gas passage having an outlet opening,

a flexible valve member in the form of an elongated blade element having one end secured to said first means and another end for opening and sealing the gas passage outlet opening as the blade element is flexed in response to gas pressure,

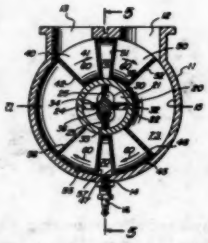
said blade element being formed of a resin which is reinforced with fiber filaments arranged in at least one group, each group of said at least one group comprising a plurality of parallel fiber filaments which occupy the thickness of the blade and are extended according to a respective direction in relation to the longitudinal axis of the blade element, said respective direction being maintained through the thickness of the blade element.

5,192,201

ROTARY ENGINE AND DRIVE COUPLING

Jacek Beben, 2426 W. Bobby La., Santa Ana, Calif. 92706

Filed Oct. 15, 1990, Ser. No. 597,367
Int. Cl.[5] F01C 1/42
U.S. Cl. 418—38 23 Claims



1. Rotary engine comprising:

a housing defining an annular cavity, said annular cavity defining a predetermined cross-section;

a first piston rotor having a first rotating member defining a first plurality of curved slots and a first plurality of outwardly extending pistons having a cross-section corresponding to said predetermined cross section;

a second piston rotor having a second rotating member defining a second plurality of curved slots and a second plurality of outwardly extending pistons having cross-section corresponding to said predetermined cross-section;

a pin guide defining a plurality of radially extending slots;

a first shaft coupled to said pin guide;

a drive cam defining a cam surface;

a second shaft coupled to said cam; and

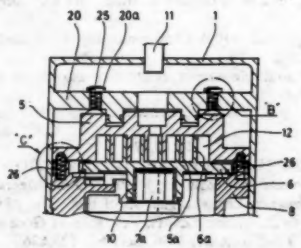
a plurality of pins each partially received within one of said curved slots in each of said first and second piston rotors and one of said slots in said pin guide and each contacting said cam surface.

5,192,202

SCROLL-TYPE COMPRESSOR WITH AN APPARATUS FOR RESTRAINING COMPRESSED FLUID FROM BEING LEAKED

Byung C. Lee, Seoul, Rep. of Korea, assignor to Gold Star Co., Ltd., Rep. of Korea

Filed Dec. 5, 1991, Ser. No. 803,116
Claims priority, application Rep. of Korea, Dec. 8, 1990, 20185/1990; Dec. 31, 1990, 22011/1990
Int. Cl.[5] F04C 18/04
U.S. Cl. 418—55.5 8 Claims



1. An apparatus for restraining leakage of compressed fluid in a scroll-type compressor having a main frame and a partition, said apparatus comprising:

upper stationary scroll having a first spiral-shaped wrap;

lower orbiting scroll interleaved with said upper stationary

scroll, said lower orbiting scroll having a second spiral-shaped wrap being of the same shape as said first spiral-shaped wrap;

means for orbiting said lower orbiting scroll without rotation;

elastic supporting means for elastically supporting said upper stationary scroll in order to allow said upper stationary scroll to wobble upwardly and downwardly as said lower orbiting scroll performs the orbital motion simultaneously with wobbling upwardly and downwardly, said elastic supporting means comprising: upper elastic supporting means mounted on said partition over said upper stationary scroll, said means being adapted for elastically supporting said upper stationary scroll downwardly; and lower elastic supporting means mounted on said main frame supporting said lower orbiting scroll, said means being adapted for elastically supporting said upper stationary scroll upwardly.

5,192,203

METHOD AND APPARATUS FOR BURNING FOAMED LIQUID FUEL

Norio Anzawa, and Koji Adachi, both of Muroran, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

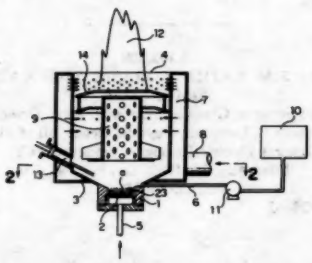
PCT No. PCT/JP91/00353, § 371 Date Jul. 31, 1991, § 102(e) Date Jul. 31, 1991, PCT Pub. No. WO91/14900, PCT Pub. Date Oct. 3, 1991

PCT Filed Mar. 15, 1991, Ser. No. 741,503

Claims priority, application Japan, Mar. 20, 1990, 2-71557; Mar. 4, 1991, 2-37515

Int. Cl.[5] F23D *11/36*

U.S. Cl. 431—2 **15 Claims**



1. A method for burning foamed liquid fuel by supplying foaming air to a liquid fuel through a porous element having a mean pore diameter of not less than 1 μm and not greater than 200 μm, thereby converting the liquid fuel into a foam constituted as an aggregation of small-diameter bubbles, and thereafter burning the foamed fuel in a combustion chamber while separately supplying thereto adequate air for complete combustion.

3. An apparatus for burning foamed liquid fuel comprising a fuel foamer including a porous element having a mean pore diameter of not less than 1 μm and not greater than 200 μm and an air supply pipe connected with the porous element, the fuel foamer defining a foaming zone, and a combustion chamber disposed immediately above the fuel foamer and adapted for supplying combustion air to the foamed fuel, the combustion chamber defining a combustion zone.

5,192,204

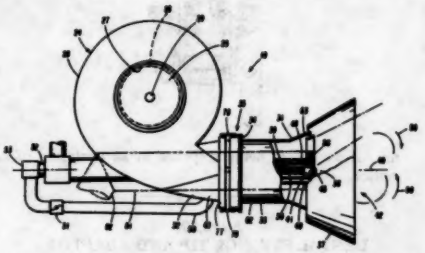
DUAL ATOMIZING MULTIFUEL BURNER

Joseph E. Musil, Ely, Iowa, assignor to Cedarapids, Inc., Cedar Rapids, Iowa

Filed Mar. 20, 1992, Ser. No. 854,210

Int. Cl.[5] F23M *3/04*

U.S. Cl. 431—10 **10 Claims**



1. A method of providing combustion gases over a range of combustion settings of a turbo burner assembly, comprising:

generating a supply of turbo air under a first pressure above atmospheric pressure;

dispersing a quantity of liquid fuel by means of compressed air above the first pressure of the turbo air;

introducing the quantity of dispersed fuel into a flame region adjacent the burner assembly and varying a rate of introduction of the fuel between a low setting and a high setting over the range of combustion settings;

introducing a first stream of primary combustion air from the supply of turbo air into the flame region in a conically expanding pattern, and entraining the dispersed fuel into the conically expanding first stream of primary combustion air;

introducing a second stream of primary combustion air from the supply of turbo air into the flame region and varying the rate separately from said first stream in accordance with variations in the rate of introduction of the fuel and mixing the first stream of primary combustion air and the entrained fuel with the second stream of combustion air, thereby providing a desirable combustion air to fuel mixture ratio over the range of combustion settings; and

passing a portion of the second stream of primary combustion air through means forming an annular gap and means forming a further annular gap communicating with the ambient on entering the flame region, the portion of the second stream of primary combustion air drawing additional air from the ambient into the flame region.

5,192,205

DEVICE FOR THE GASIFICATION AND FLOW CONTROL OF LIQUIFIED PETROLEUM GAS

Masayuki Iwahori, 15-19, Nakada Honmachi, Shizuoka-ken, Japan

Filed Jul. 26, 1991, Ser. No. 736,737

Claims priority, application Japan, Aug. 17, 1990, 2-217330

Int. Cl.[5] F23D *14/28*

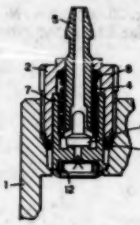
U.S. Cl. 431—344 **10 Claims**

1. An improved device for the gasification and flow control of liquefied petroleum gas in an apparatus comprising a pressure container, a valve and a nozzle, the valve having a passage into the nozzle, said pressure container containing liquefied petroleum gas, said liquefied petroleum gas being subjected to gasification and flow control when said valve is opened such that gasified liquefied petroleum gas is emitted through said passage and through said nozzle, the improvement comprising:

an orifice having a diameter of between 30 and 200 μm; and

a microporous film having a hydrophobic property, said

orifice being disposed at an upstream side of said valve, said orifice opening to the passage of said valve, said



microporous film being disposed at an upstream of said orifice.

5,192,206

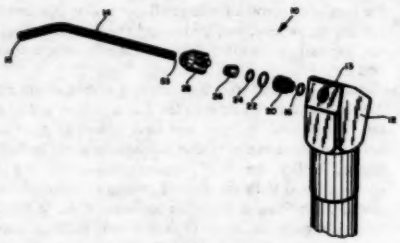
DENTAL SYRINGE TIP AND ADAPTOR

Warren Davis, 3026 Sullivan Ave., Rosemead, Calif. 91770; David Wasserman, 2095 Mohigan Way, Las Vegas, Nev. 89109, and Richard R. Mathews, 7950 S. Alameda St., Huntington Park, Calif. 90255

Continuation-in-part of Ser. No. 351,431, May 12, 1989, Pat. No. 5,049,071, which is a continuation-in-part of Ser. No. 241,081, Sep. 6, 1988, abandoned. This application Oct. 11, 1990, Ser. No. 596,987

Int. Cl.[5] A61C *17/00*

U.S. Cl. 433—80 **32 Claims**



1. A syringe tip adaptor for connecting a syringe tip to a handpiece body comprising:

a) a generally cylindrical body having a hollow interior,

b) a first means for threadably connecting the cylindrical body to the handpiece body,

c) a baffle mounted within the hollow interior of the cylindrical body and having an axial passageway therein for receiving water from the handpiece body,

d) means for mounting a syringe tip to the baffle on the interior of the adaptor, the means for mounting comprising an elongated tapered male connector formed integrally with the baffle and having an axial opening therethrough adapted to cooperate with a central passageway in the syringe tip to provide a water passageway from the handpiece through the adaptor and into the syringe tip whereby when the syringe tip is mounted on the tapered male connector, the syringe tip will be tightly held on the tapered male connector to prevent axial rotation of the syringe tip and to ensure that the air and water passageways do not leak into each other, the tapered male connector being of sufficient length to prevent the syringe tip from cracking when it is mounted on the tapered male connector,

e) at least one channel for introducing air from the handpiece body into the interior of the adaptor and a chamfered surface on the cylindrical body aligned with the channel,

f) a first sealing means mounted on the cylindrical body for preventing leakage of water from the handpiece body to the interior of the adaptor,

g) a second sealing means mounted on the cylindrical body for preventing the leakage of air passing from the handpiece body to the interior of the adaptor, and

h) a third sealing means mounted on the cylindrical body for securing the syringe tip to the interior of the adaptor.

5,192,207

COMPOSITE RESIN CROWN, REPLACEMENT TOOTH AND METHOD

Davey G. Rosellini, 1950 Balearic Dr., Costa Mesa, Calif. 92626

Filed Sep. 17, 1991, Ser. No. 760,980

Int. Cl.[5] A61C *5/10*

U.S. Cl. 433—223 **22 Claims**

1. A method of making a permanent crown for a tooth comprising:

grinding and shaping the tooth to form a prepared tooth;

filling a transparent shell tooth form with a light setting resin;

disposing the filled shell tooth form onto the prepared tooth;

illuminating the filled transparent shell tooth form to set the light setting resin therein and bond the light setting resin to the shell tooth form and prepared tooth; and

shaping and polishing the shell tooth form in situ to form a crown.

5,192,208

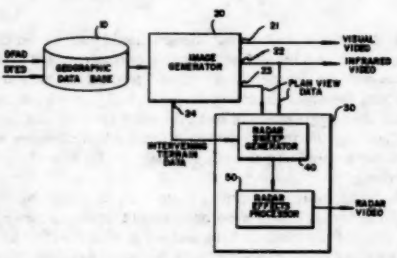
RADAR SIMULATION FOR USE WITH A VISUAL SIMULATOR

Robert L. Ferguson, Glenwood; John R. Ellis, Ormond Beach, and Kenneth B. Donovan, Daytona Beach, all of Fla., assignors to General Electric Company, Syracuse, N.Y.

Filed Aug. 21, 1989, Ser. No. 396,890

Int. Cl.[5] G09B *9/00*

U.S. Cl. 434—2 **20 Claims**



1. A system for providing simulated radar video, comprising:

image generator means for providing visual and/or infrared video and further for providing from a predetermined

viewpoint plan view data of an area to be illuminated by a radar; and

radar processor means coupled to the image generator means, the radar processor means for producing the simulated radar video in response to the plan view data.

5,192,209

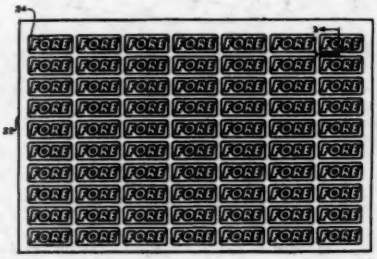
COLOR DEMONSTRATOR

John P. Sweet, 2273 New York Ave., Scotch Plains, N.J. 07076

Filed Sep. 9, 1991, Ser. No. 756,521

Int. Cl.[5] G09B *19/00*

U.S. Cl. 434—98 **8 Claims**



1. A design color demonstrator comprising:

a plastic support board;

a transparent plastic background sheet supported by the plastic board and having a plurality of spaced identical but differently colored panels each with identical transparent letterings;

a transparent plastic lettering sheet unit supported on the background sheet and having a plurality of spaced identical but differently colored letterings, corresponding to the identical transparent letterings of said colored panels, printed thereon for superimposing one at a time on each panel transparent lettering, and

a mask overlay sheet supported on the lettering sheet unit and having a printed mask portion with a plurality of spaced identically shaped clear openings for superimposing a selective opening on a chosen panel and a chosen superimposed lettering and for recording respective code numbers of the panel color and the lettering color and the lettering outline color, said mask overlay sheet and background sheet and lettering sheet unit being slidable relative to each other and relative to the support board.

5,192,210

TRAINING APPARATUS FOR CATTLE ROPING

Darrell E. Thomas, P.O. Box 1103; Donald E. Standley, Rt. 2 Box 86B, Haynes Rd., and Leon J. Jackson, Rt. 2, Box 817B, all of Anahuac, Tex. 77514

Filed Sep. 27, 1991, Ser. No. 767,104

Int. Cl.[5] A63B *69/00*; **G09B** *9/00*

U.S. Cl. 434—247 **14 Claims**

1. A training apparatus for cattle roping to be used by a roper, comprising:

a frame assembly having a front portion and a rear portion, the front portion spaced from said rear portion a fixed distance adequate for clearance of the hand of the roper when forming a dally during cattle roping operations;

means for securing said rear portion of said frame assembly to the body of the roper; and

a saddle horn attached to said front portion of said frame assembly, said saddle horn being spaced from the body of the roper by said frame assembly a distance allowing

clearance of the hand of the roper when forming a dally during cattle roping operations.

5,192,211

METHOD OF MAKING ANIMAL SPECIMEN

Tzuoo-Lie Yeh, No. 23, tzu Li Li, Chung Li City, Taiwan

Filed Jul. 29, 1991, Ser. No. 737,011

Int. Cl.[5] G09B *23/00*

U.S. Cl. 434—296 **3 Claims**

1. A method for making animal specimen capable of maintaining its natural color and elasticity, said method comprising the steps of:

(a) preparing a 3-in-one mixed liquid solution by adding, per 10 liters of said 3-in-one mixed liquid solution, 5 liters of 35% formaldehyde into 5 liters of volatile alcohol to form an intermediate mixed solution, then adding a granular mixture containing 10 grams of 100% boric acid, 150 grams of sodium chloride and 30 grams of phenol into said intermediate mixed solution to form said 3-in-one mixed liquid solution, and agitating said 3-in-one mixed liquid solution until said granular mixture is completely dissolved;

(b) cleaning and washing said specimen to be treated;

(c) soaking said specimen in said 3-in-one mixed liquid solution; and

(d) removing said specimen from said 3-in-one mixed liquid solution.

5,192,212

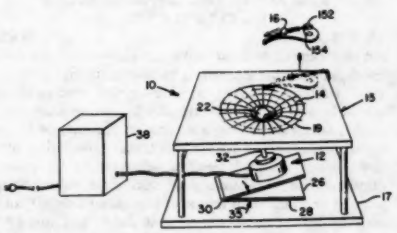
FLEXIBLE HYPRESURFACE ORBITAL MODEL

Chong Kyu Kim, 2580 Coney Island Ave., Brooklyn, N.Y. 11223

Filed Aug. 14, 1992, Ser. No. 930,263

Int. Cl.[5] G09B *23/08*

U.S. Cl. 434—302 **8 Claims**



1. A hypersurface orbital model, comprising:

a) a large closed hypersurface made of a highly flexible

material, wherein said hypersurface is supported by a rigid frame having a circular opening;

b) means for creating a moving deformation on said large hypersurface such that said moving deformation produces a moving local hypersurface whose geometry is similar to said large hypersurface; and

c) means for injecting a projectile sphere onto the surface of said large hypersurface such that said projectile sphere maintains a fixed orbit on the surface of said large hypersurface due to the initial trajectory of said projectile sphere and the movement of said deformation.

5,192,213

NEST TYPE PRESSURE CONNECTING DEVICE

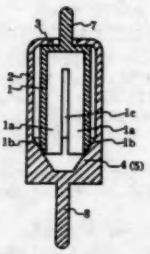
Motoki Kosugi, Tokyo; Noriyuki Matsuoka, and Toru Takahashi, both of Yokohama, all of Japan, assignors to Yamaichi Electric Co., Ltd., Tokyo, Japan

Filed Mar. 17, 1992, Ser. No. 851,797

Claims priority, application Japan, Mar. 27, 1991, 3-87484

Int. Cl.[5] H01R 9/09

U.S. Cl. 439—66 **5 Claims**



1. A nest type pressure connecting device comprising a an inner jacket member having split elements split by grooves and opened up at a front end face thereof, an outer jacket member with the inner jacket member inserted therein first from said front said outer jacket member having end, an inner jacket member pressing portion formed therein in such a manner as to be opposite said front end of said inner jacket member and adapted to push front end portions of said split elements, which are split by said split grooves, inwardly from outside against elasticity thereof in order to close said inner jacket member when said inner jacket member is pushed into said outer jacket member, and a male terminal disposed at a tail end of either of said outer and inner jacket members and adapted to contact an electric part under pressure.

5,192,214

PLANAR INTERCONNECT WITH ELECTRICAL ALIGNMENT INDICATOR

Victor M. Samarov, Carlisle, and George A. Doumani, N. Andover, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Feb. 10, 1992, Ser. No. 834,073

Int. Cl.[5] H01R 9/09

U.S. Cl. 439—67 **10 Claims**

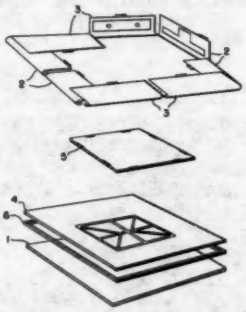
1. An electrical connector that electrically indicates connector mis-alignment that exceeds a tolerance, comprising:

a rigid substrate having a plurality of electrical signal contacts on a planar, electrically insulating surface;

a flexible substrate having a respective plurality of electrical signal contacts on a planar, electrically insulating surface, said surface of said flexible substrate to be placed in contact with said surface of said rigid substrate in an aligned position such that said plurality of signal contacts on said flexible substrate are coupled to and aligned with corresponding ones of said respective plurality of signal contacts on said rigid substrate to within said tolerance;

spaced-apart first and second electrically conductive trace materials on one of said surfaces bounding first and second target areas, respectively;

third and fourth electrically conductive trace materials on the other of said surfaces, sized such that the size of said first target area exceeds the size of said third trace material by less than twice said tolerance and the size of said second target area exceeds the size of said fourth trace material by less than twice said tolerance, and located such that when said flexible substrate is in said aligned position, said third trace material is located within said first target area



and said fourth trace material is located within said second target area; and

means for coupling said first, second, third, and fourth trace material to a circuit to determine whether said trace materials form a short circuit,

said connector indicating mis-alignment that exceeds said tolerance by forming a short circuit between either said first trace material and said third trace material or between said second trace material and said fourth trace material.

5,192,215

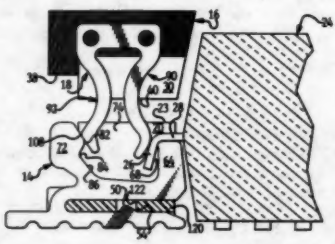
ELECTRICAL SOCKET FOR LEADED CHIP CARRIERS

Dimitry G. Grabbe, Middletown; Iosif Korsunsky, Harrisburg, and Daniel R. Ringler, Elizabethville, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 17, 1991, Ser. No. 780,666

Int. Cl.[5] H01R 9/09

U.S. Cl. 439—73 **2 Claims**



1. A chip carrier socket for use with a leaded chip carrier, the chip carrier socket comprising:

a base having a chip carrier receiving opening, contacts positioned proximate the chip carrier receiving opening, the contacts have means for electrically engaging circuits on a substrate, arms extend outwardly from the contacts, each contact has a pair of spaced arms, respective arms have a recess provided on the inner surfaces thereof;

a cover with a discrete locking members extending there-

from, the discrete locking members have resilient cantilever beams which extend from the cover toward the base, each locking member has a pair of spaced apart cantilever beams, the cantilever beams are positioned in alignment with the arms of the contacts, respective cantilever beams have heel portions on outside surfaces thereof, the heel portions are configured to have a similar configuration to the recesses of the respective arms of the contacts;

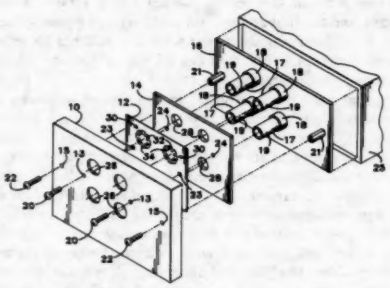
whereby the heel portion of the respective cantilever beams are positioned in, and cooperate with, the recesses of the respective arms to provide a positive lock to insure that the cover is maintained in position on the base, and to insure that the positive electrical connection will be maintained between the chip carrier and the chip carrier socket.

5,192,216

APPARATUS FOR GROUNDING CONNECTORS TO INSTRUMENT CHASSIS

Steven K. Knauber, and Daniel Reiswig, both of Grass Valley, Calif., assignors to The Grass Valley Group, Inc., Nevada City, Calif.

Filed Nov. 8, 1991, Ser. No. 789,492
Int. Cl.[5] H01R *13/648*
U.S. Cl. 439—108 **14 Claims**



1. An apparatus comprising:

an electrical connector having a conductive barrel;

a conductive chassis member defining an aperture with a dimension that is larger than a corresponding dimension of the barrel;

a thin, substantially planar ground sheet of springy and conductive material defining an aperture, with the aperture in the thin ground sheet having a periphery that includes a plurality of alternating gaps and extensions, said extensions being substantially coplanar with said ground sheet, with a dimension defined by the gaps being larger than the corresponding dimension of the barrel, and a dimension defined by the extensions being smaller than the corresponding dimension of the barrel, the thin ground sheet being in electrical contact with and parallel to the conductive chassis member; and

means for securing the thin ground sheet to the chassis member with the apertures in the thin ground sheet and the conductive chassis member in alignment;

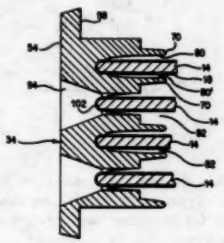
whereby, when the barrel of the electrical connector is made to pass through the aperture in the thin ground sheet and the aperture in the conductive chassis member, the barrel of the electrical connector contacts the extensions causing the extensions to bend so that the extensions of the thin ground sheet remain in electrically conducting contact with the barrel of the electrical connector thereby grounding the electrical connector to the conductive chassis member.

5,192,217

ELECTRICAL BUSWAY DISTRIBUTION SYSTEM HAVING PROVISIONS FOR PREVENTING UNINTENTIONAL CONTACT WITH LIVE CONDUCTORS AT TAP-OFF LOCATIONS

Daniel L. Wittmer, Fredericktown, Ohio, assignor to Square D Company, Palatine, Ill.

Filed Dec. 31, 1991, Ser. No. 816,507
Int. Cl.[5] H01R *4/60*
U.S. Cl. 439—211 **11 Claims**



1. An improved electrical distribution system having a plurality of bus bars, each having at least one edge and each bus bar being partially enclosed in an insulating sheath, a housing for enclosing and supporting the bus bars, a plurality of access openings spaced at intervals along the housing, each access opening providing access to an uninsulated contact surface on a bus bars for the electrical connection of a tap-off unit, and a plug-in base assembly connected to the housing and including a base having a plurality of plug-in openings for accessing the contact surfaces of the bus bars, said improvement comprising:

a plurality of finger barriers for preventing unintentional human finger contact with live bus bars proximate said plug-in openings, said finger barriers further comprising:

a body member having a first end, a second end, an inside surface, an outside surface;

each said body member attached to said base such that said member traverses one of said plug-in openings of said base.

5,192,218

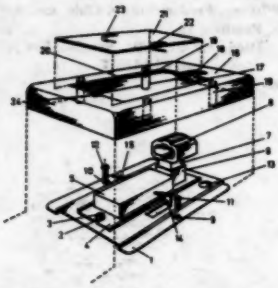
LAMPHOLDER ASSEMBLY

Adrianus M. Kuiper, Lisstraat 27, Landsmeer, Netherlands 1121 AR

PCT No. PCT/NL90/00159, § 371 Date Jun. 21, 1991, § 102(e) Date Jun. 21, 1991, PCT Pub. No. WO91/06991, PCT Pub. Date May 16, 1991
PCT Filed Oct. 22, 1990, Ser. No. 691,037
Claims priority, application Netherlands, Oct. 23, 1989, 8902616
Int. Cl.[5] H01R *33/02*
U.S. Cl. 439—226 **10 Claims**

1. A lampholder assembly for one or more fluorescent lamps having a single lamp cap, comprising at least one lampholder module, which lampholder module comprises a part for receiving the lamp (the lamp part) and a narrower part supporting the lamp part (the support part), as well as at least one ballast, wherein the assembly comprises a base plate for mounting thereof the lampholder module and the ballast, as well as a caplike member having a top surface which, when said caplike member has been mounted, is disposed in a plane below the lamp part of the lampholder module, which top surface has an opening provided therein formed to have a broad portion and an adjacent narrower portion, in such a way that at least the lamp part of the lampholder module can pass through said opening when the caplike member is being mounted, said opening further being provided in a location such that when the cap has been mounted, the support part of the lampholder module is disposed in the narrower portion of the opening,

which narrower portion itself is narrower than the lamp part of the lampholder module, and a cover plate of suitable dimensions for covering the broader portion of said opening, which



broader portion, when said cap has been mounted, is disposed before the support part of the lampholder module, there being provided means for attaching said cover plate, said caplike member and said base plate to each other.

5,192,219

VIBRATION RESISTANT LOCKING COUPLING

Clifford C. Fowler, Chatsworth, and Edward P. Goett, Geyserville, both of Calif., assignors to Engineered Transitions Co., Inc., Healdsburg, Calif.

Filed Sep. 17, 1991, Ser. No. 761,303
Int. Cl.[5] H01R *4/38*
U.S. Cl. 439—321 **15 Claims**

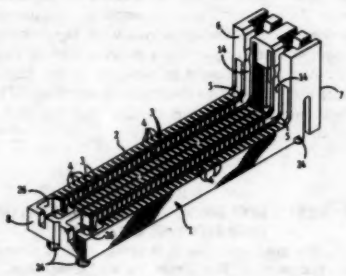
1. A locking coupling comprising
a body having a plurality of axially extending teeth;
a first collar movably mounted on said body;
a plurality of spring fingers extending axially from said first collar;
said spring fingers having axially extending teeth engageable with said teeth on said body; and
a locking collar mounted on said body for movement between various positions;
said locking collar in one of said positions causing the teeth of said spring fingers to engage the teeth on said body whereby to resist movement of said first collar relative to said body.

5,192,220

DUAL READOUT EXTENDED SOCKET

Timothy B. Billman, King, and Roger L. Thrush, Clemmons, both of N.C., assignors to AMP Inc., Harrisburg, Pa.

Filed Jan. 31, 1992, Ser. No. 829,795
Int. Cl.[5] H01R *13/62*
U.S. Cl. 439—327 **12 Claims**



1. A socket system comprising: first and second sockets for receiving a circuit panel having circuit traces thereon, each socket having multiple electrical terminals in terminal receiving slots for engaging circuits on both sides of the circuit panel, the terminals of the first socket being relatively densely spaced, the terminals of the second socket being relatively widely spaced, and the first and second sockets having panel receiving slots in longitudinal alignment with one another to receive a circuit panel on which first circuit traces that are tolerant of relatively dense spacing are routed on the circuit panel for alignment with the relatively densely spaced terminals of the first socket, and second circuit traces that are intolerant of relatively dense spacing with other circuit traces are relatively widely spaced, and are routed on the circuit panel away from the first circuit traces and into alignment with the relatively widely spaced terminals of the second socket, the first socket has a panel support member projecting upward from the panel receiving slot, and an end of the second socket is adjacent the first socket, and is adapted without a panel support member so as to position the terminal receiving slots thereof relatively close to the panel support member of the first socket.

5,192,221

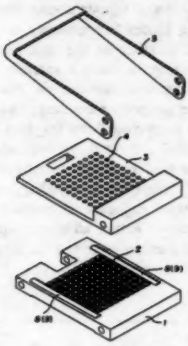
SOCKET FOR ELECTRIC PART

Noriyuki Matsuoka, Kanagawa, and Kazumi Uratsuji, Tokyo, both of Japan, assignors to Yamaichi Electric Co., Ltd., Tokyo, Japan

Filed Sep. 11, 1991, Ser. No. 757,532
Claims priority, application Japan, Sep. 12, 1990, 2-243370
Int. Cl.[5] H01R *4/50*
U.S. Cl. 439—342 **4 Claims**

1. A socket for an electric part comprising:
a socket body formed of an insulator material and having a plurality of socket body contacts arranged in an area of said socket body and positioned so as to be contacted by terminals of an electric part;
a movable plate for receiving an electric part with a plurality of terminals and positioned above an upper surface of said socket body in such a manner as to direct the plurality of terminals into the socket body contacts and to be movable laterally along said upper surface, a lateral movement in one direction forming a contacting state between corresponding contacts and terminals and a lateral movement in an opposite direction releasing said contacts and terminals from said contacting state; and
a conductive shoe means interposed between said socket body and said movable plate and in an area other than the area of the socket body in which the contacts are arranged, said conductive shoe means supporting said mov-

able plate in spaced relationship with said socket body above said socket body and allowing said movable plate to



slip along said socket body when said movable plate is laterally moved.

5,192,222

PLUG CONNECTION DEVICE FOR SIMULTANEOUS MECHANICAL AND ELECTRICAL CONNECTION OF TWO ELECTRONIC UNITS

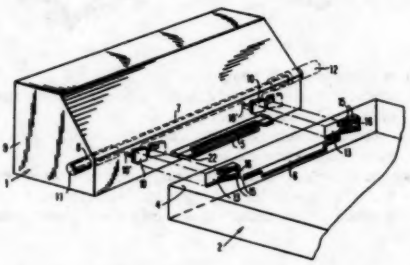
Klaus D. Krause, Dietenhofen; Rudolf Schmeykal, Hemhofen, and Florian Stolzenberger, Altenthann, all of Fed. Rep. of Germany, assignors to Ta Triumph-Adler AG, Nuremberg, Fed. Rep. of Germany

Filed Sep. 26, 1991, Ser. No. 766,434

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1990, 4032801

Int. Cl.[5] H01R *4/50*

U.S. Cl. 439—347 **8 Claims**



1. A plug connection device for mechanical and electrical connection of a first electronic unit with a second electronic unit, said connection device comprising an electronic plug (5) provided in an outer wall (3) of a first housing (1) of a first electronic unit, the first housing having at least one side wall (9) connected to the outer wall (3) of the first housing (1); a plug socket (6) provided in an outer wall (4) of a second housing (2) of a second electronic unit, the electronic plug (5) being electrically connectable with the plug socket (6); and a mechanical locking means separate from the electronic plug (5) and plug socket (6),

said mechanical locking means comprising an operating device including an operating rod (7) protruding from the at least one side wall (9) of the first housing (1) and moveable substantially parallel to the outer wall (3) of the first housing (1); at least two plate-like lock studs (10), each of the plate-like lock studs (10) being connected to the operating rod (7) by an arm (10'), extending from the first housing (1) and being inclined to the outer wall (3) at an angle α; a lock stud recess (13) provided in the outer wall (4) of the second housing (2) for each of the plate-like lock studs (10), each of the plate-like lock studs being engageable in one of the lock stud recesses (13), and each of the lock stud recesses (13) being bounded by an inclined running surface (15) provided in the outer wall (4) of the second housing (2) and a corresponding housing wall portion (17) extending parallel to the running surface (15) and being spaced therefrom a distance corresponding approximately to a thickness of the plate-like lock studs, each of the inclined running surfaces (15) being inclined substantially at the angle α to the outer wall (4) of the second housing (2) and having a horizontal slot (16) in which one of the arms (10') is slidable; and lateral plate-like guide shoulders (22) projecting from the outer wall (3) in the vicinity of the electronic plug (5) on the first housing (1) and engagable on each side of the plug socket (6) in the second housing (2) to provide additional guidance during connection of the electronic plug and the plug socket (6), so that, when the lock studs (10) are engaged in the lock stud recesses (13) and the operating rod (7) is moved so that the first and second electronic units are pulled together and the lock studs (10) contact and run on the running surfaces (15), the electronic plug (5) is connected simultaneously electrically and mechanically with the plug socket (6).

5,192,223

WIRE CONNECTOR FOR CABLE WIRE, IN PARTICULAR OF TELECOMMUNICATION CABLES

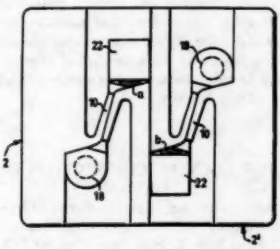
Dieter Gerke, and Manfred Müller, both of Berlin, Fed. Rep. of Germany, assignors to Krone Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 30, 1990, Ser. No. 605,952

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1989, 3938365

Int. Cl.[5] H01R *4/24*

U.S. Cl. 439—402 **8 Claims**



1. A wire connector for cable wires, such as telecommunication cables, comprising:

a lower housing section defining at least two substantially parallel guide channels for receiving cable wires, each guide channel having a side defined by crosspieces, said lower housing section having side walls extending substantially in parallel with said guide channels, said side walls including a longer side wall and a shorter side wall, said longer side wall including a receiving groove shaped complimentary to said shorter side wall;

an upper housing section substantially identical to said lower housing section;

cutting/clamping contacts positioned in the guide channels of said lower housing section;

snap-fit elements connected to each of said housing sections, said housing sections being snap-fit together after rotating one of the housing sections 180 degrees relative to the other one of said housing sections, said crosspieces of said upper housing section forming a press-in section for press-

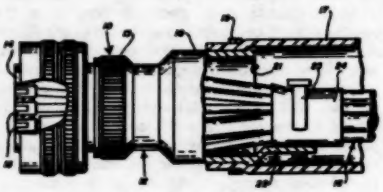
ing cables wires into the cutting/clamping contact elements of the lower housing section, said snap-fit elements being formed one on each of said side walls of each of the housing sections.

5,192,224

CONNECTOR BACKSHELL FOR USE WITH FLEXIBLE CONDUIT WITH AN INTERNAL STRAIN RELIEF CLAMP

Allen J. Bernardini, Southbury, Conn., assignor to Litton Systems, Inc., Watertown, Conn.

Filed Feb. 19, 1992, Ser. No. 839,934
Int. Cl.[5] H01R *13/56, 13/58*
U.S. Cl. 439—471 5 Claims



1. A heavy duty multi-pin connector for use with a protective hose comprising:

a plugshell and an insert having a plurality of electrical terminals mounted therein;

a backshell coupled to the plugshell;

a plurality of conductors extending through the backshell and the plugshell and coupled to the electrical terminals;

a backshell extension on the rear of the backshell;

a protective hose removably mounted on the backshell extension and means for securing the protective hose to the backshell extension;

means for providing a strain relief for the plurality of conductors coupled to the electrical terminals, said means comprising a protruding finger extending from the rear of the backshell extension and a strain relief band encircling the protruding finger and the plurality of conductors, whereby the plurality of conductors are secured to the protruding finger by the strain relief band; and

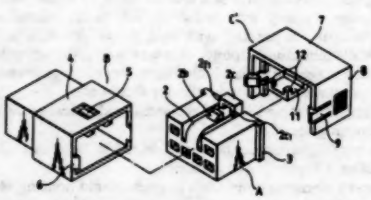
a protective bushing between the strain relief band and the plurality of conductors.

5,192,225

CONNECTOR LOCKING CONNECTION DETECTION DEVICE

Tetsuaki Suzaki, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Nov. 1, 1991, Ser. No. 786,517
Claims priority, application Japan, Nov. 8, 1990, 2-301097; Nov. 9, 1990, 2-302786
Int. Cl.[5] H01R *3/00*
U.S. Cl. 439—489 10 Claims



1. A connector locking connection detection device comprising:

a male connector housing having a flexible lock arm;

a female connector housing having an engagement portion for said flexible lock arm;

a locking connection detection member to be attached to a rear portion of said male connector housing in advance of mating said male and female connector housings;

resilient retaining pieces for retaining said locking connection detection member to the rear portion of said male connector housing in such a manner that said locking connection detection member is extended rearwardly from said male connector housing; and

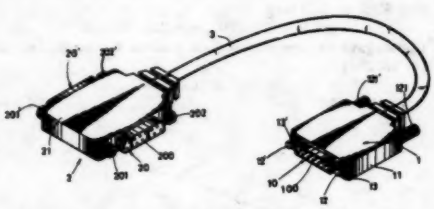
engagement release projections for said resilient retaining pieces, provided on said female connector housing; wherein when said male and female connector housings are completely connected together with said lock arm engaged with said engagement portion, said engagement release projections acting to disengage said resilient retaining pieces, thereby enabling the removal of said locking connection detection member.

5,192,226

DOUBLE-OUTPUT PORT CABLE ASSEMBLY FOR NOTEBOOK COMPUTERS

Tsan-Chi Wang, 1 F., No. 13, Lane 312, Chung Chen Rd., Hsin Tien City, Taipei Hsien, Taiwan

Filed May 6, 1992, Ser. No. 878,971
Int. Cl.[5] H01R *11/00*
U.S. Cl. 439—502 8 Claims



1. A cable assembly comprising:

a connector assembly, said connector assembly comprising a male D-miniature connector;

an output adapter, said output adapter comprising two female D-miniature connectors; and

a coaxial cable connected between said connector assembly and said output adapter to electrically connect said female D-miniature connectors to said male D-miniature connector.

5,192,227

DIN RAIL MOUNTING BRACKET

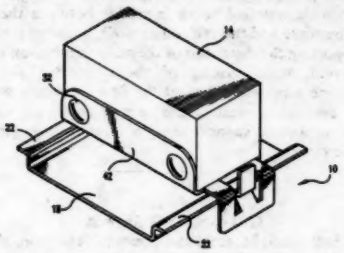
Ronald K. Bales, Raleigh, N.C., assignor to Square D Company, Palatine, Ill.

Filed Dec. 23, 1991, Ser. No. 811,728
Int. Cl.[5] H01R *13/60*
U.S. Cl. 439—532 7 Claims

1. An apparatus for adapting an electrical or electronic device enclosure to be mounted on a DIN rail having two opposed outwardly extending flanges, said apparatus comprising:

a bracket, generally rectangular in shape, having a top surface, a bottom surface, a first end, a second end generally parallel to and spaced apart from said first end, at least one

mounting flange having apertures therein for receiving means for attaching to the electrical or electronic device



enclosure, and means for rotatively attaching to the DIN rail and means for selectively releasing from the DIN rail.

5,192,228

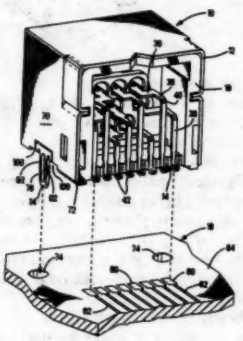
SHIELDED SURFACE MOUNT ELECTRICAL CONNECTOR WITH INTEGRAL BARBED BOARD LOCK

Henry B. Collins, Harrisburg; Benjamin H. Mosser, III, Middletown, and Steven G. Smith, Linglestown, all of Pa., assignors to AMP Inc., Harrisburg, Pa.

Continuation of Ser. No. 760,421, Sep. 16, 1991, abandoned. This application Aug. 11, 1992, Ser. No. 928,523

Int. Cl.[5] H01R *13/73, 13/658*

U.S. Cl. 439—567 **16 Claims**



1. An electrical connector, comprising: an insulative housing, conductive electrical contacts in said housing having bendable portions connected to solder tails extending to initial positions below said housing, a conductive shield over said housing, and circuit board engaging board locks extending from said shield below said housing, barbs on said board locks gripping walls of apertures in a circuit board for holding said housing against said circuit board and for holding said solder tails against pads on said circuit board while said solder tails have been moved upwardly from their initial positions bending the bendable portions of said contacts and creating forces exerted by said solder tails against said pads on said circuit board, and further comprising solder barriers in the form of recessed score lines in said shield, said score lines extending above respective board locks, and opposite ends of said score lines intersecting respective edges of said shield.

5,192,229

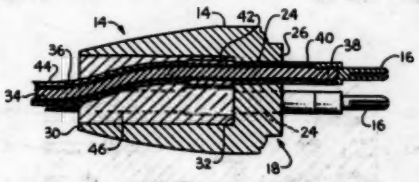
ELECTRICAL CABLE TERMINATION

George W. Clark, Irvine, and Jens L. List, Jr., Westminster, both of Calif., assignors to Sonic Electric, Inc., Paramount, Calif.

Filed May 29, 1992, Ser. No. 891,278

Int. Cl.[5] H01R *13/56*

U.S. Cl. 439—604 **8 Claims**



1. A plug type electrical termination for an armored electrical cable with a plurality of insulated electrical conductors therewithin comprising:

a hollow connector head open at one end, through which open end said insulated electrical conductors extend into said head, said head having a cylindrical plug portion extending outwardly from the other end of the connector head so as to close said other end,

said plug portion having an axial bore extending therethrough for each of said electrical conductors, whereby each of said electrical conductors extends into the head and through a preselected bore of the plug portion so as to terminate beyond the plug portion in an uninsulated threaded conductor tip, to which a conductor terminal is attached;

individual enclosing means for enclosing the portion of each conductor within said bore; and

a body of high temperature solder filling said head so as to close said head open end to hold the electrical conductors fixed within the head and provide a water-tight seal thereabout.

5,192,230

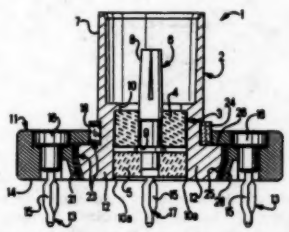
VERTICAL MOUNT CONNECTOR

Andrew J. Gabany, Mechanicsburg, and James G. Dunbar, Lancaster, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 18, 1992, Ser. No. 885,101

Int. Cl.[5] H01R *13/66*

U.S. Cl. 439—620 **14 Claims**



1. An electrical connector comprising: a conductive contact connected to a circuit board mounting terminal, an insulative body surrounding the contact, an electrically conductive shell surrounding the insulative body, an electrically conductive base surrounding the shell, a mating portion of the shell projecting forwardly of the base, conductive circuit board mounting posts on the base, and an electrical capacitance element

between the shell and the base, thereby establishing capacitive coupling therebetween.

5,192,231

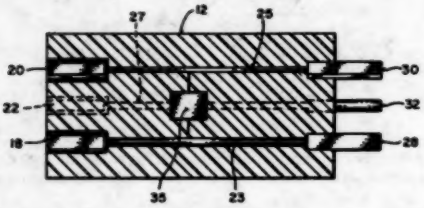
POWER LINE COMMUNICATIONS COUPLER

Robert A. Dolin, Jr., Menlo Park, Calif., assignor to Echelon Corporation, Palo Alto, Calif.

Continuation of Ser. No. 540,584, Jun. 19, 1990, abandoned. This application Mar. 26, 1991, Ser. No. 679,153

Int. Cl.[5] H01R *13/66*

U.S. Cl. 439—620 **4 Claims**



1. An electrical coupler comprising:

a generally cylindrical housing;

a male portion disposed in one end of said housing and comprising first and second power line prongs and an additional line prong for engaging a 220 volt receptacle;

a female portion disposed at the other end of said housing and comprising first and second power prong receiving slots and an additional prong receiving slot for mating with a 220 volt plug and electrically connected to said first and second prongs and said additional line prong, respectively;

coupling means electrically connected between said first and second power line prongs for providing a high impedance to low frequency alternating current and low impedance to high frequency electrical signals for coupling high frequency communication signals between said first and second power line prongs.

5,192,232

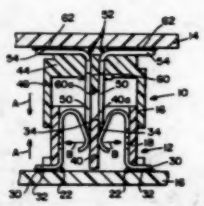
ELECTRICAL CONNECTOR SYSTEM UTILIZING THIN MALE TERMINALS

William R. Lenz, Crestwood; Arvind Patel, Naperville; James T. Roberts, Oak Park, and Jack J. Schafer, LaGrange, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Jul. 13, 1992, Ser. No. 912,922

Int. Cl.[5] H01R *13/00*

U.S. Cl. 439—660 **8 Claims**



1. In an electrical connector system which includes a first connector assembly having an insulative housing defining a cavity with a thin male terminal extending thereinto, and a second connector assembly having an insulative housing defining a cavity with a spring contact terminal located therein, the thin male terminal being engageable with the spring contact terminal upon mating of the connector assemblies, wherein the improvement comprises said first connector assembly including a supporting wall for supporting one side of the thin male terminal and extending only partially along the length of the male terminal to leave an unsupported distal end of the terminal, said second connector assembly including a preloading wall against which the spring contact terminal is biased for preloading the spring contact terminal, and the distal end of said thin male terminal being insertable between the spring contact terminal and the preloading wall, with the preloading wall supporting the distal end of the male terminal on said one side thereof, upon mating of the connector assemblies, whereby the supporting wall of the first connector assembly and the preloading wall of the second connector assembly combine to provide support along a substantial length of the thin male terminal.

5,192,233

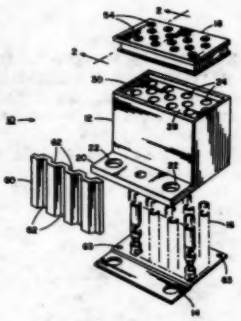
GROUNDING BLOCK

Nino R. Suffredini, Monroe, and James D. Anderson, Norwalk, both of Conn., assignors to Burndy Corporation, Norwalk, Conn.

Filed Jan. 7, 1992, Ser. No. 817,713

Int. Cl.[5] H01R *11/09*

U.S. Cl. 439—723 **10 Claims**



1. A grounding block comprising:

a housing having a contact receiving area for receiving contact and a grommet receiving area for receiving at least a portion of a grommet;

contacts positioned in the contact receiving area;

a contact alignment spacer located between the contacts inside the housing in the contact receiving area, the spacer having a substantially planar corrugated shape;

a grommet comprising of a resilient polymer material located, at least partially, in the grommet receiving area, the grommet including holes therethrough and grooves on an exterior of the grommet; and

means for fixedly connecting the grommet to the housing comprising a bonding adhesive located between portions of the housing in the grommet receiving area and portions of the exterior of the grommet and in the grooves.

5,192,234

ELECTRICAL TERMINAL AND A HOUSING FOR ELECTRICAL APPARATUS INCLUDING SUCH A TERMINAL

Jean-Paul Heng, Lyon, and André Marmonier, Bron, both of, France, assignors to Entrelec S.A., Villeurbanne, France

Filed Apr. 24, 1992, Ser. No. 873,226

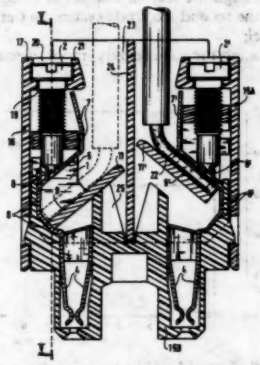
Claims priority, application France, Apr. 26, 1991, 91 05191

Int. Cl.[5] H01R *4/38*

U.S. Cl. 439—806 **9 Claims**

1. An electrical terminal for putting a conductor wire into connection with a conducting strip of electrical equipment by holding the wire against a clamping element of the strip between said element and another clamping element which constitutes the at least approximately parallel bottom of a cage

which surrounds the strip, clamping being obtained under drive from a clamping screw screwed into an element of the cage and situated opposite to the bottom, the end of the screw pressing against the face of the clamping element of the strip which faces away from the clamping element of the cage, said screw being disposed obliquely relative to the clamping elements of the strip and of the cage, and pressing against at least one lateral thrust structure opposing the transverse repulsion



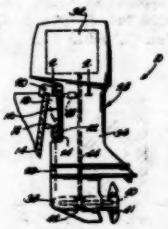
reaction of the end of the screw on the clamping elements on the strip on clamping, the clamping elements of the strip and of the cage delimiting between them an insertion duct for the wire, which duct extends obliquely relative to the screw, wherein the clamping element of the cage is extended by an extension constituting a wire-guide which projects beyond the cage from one of the sides into which the wire insertion duct opens out.

5,192,235

OUTBOARD MOTOR VIBRATION ISOLATION SYSTEM INCLUDING IMPROVED RUBBER MOUNT

William D. Dunham, and John C. Heiti, both of Waukegan, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Oct. 25, 1991, Ser. No. 782,545
Int. Cl.[5] B63H *21/26*
U.S. Cl. 440—52 19 Claims



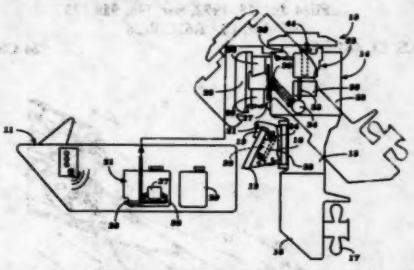
1. A marine propulsion device comprising a propulsion unit including wall means defining a cavity, and a mounting member which is located in said cavity and which includes an annular outer shell including an outer surface engaging said wall means and an inner surface defining an axially extending bore having a minimum diameter, an inner core extending through said bore, being adapted to be connected to a kingpin, and including an end core portion having a diameter less than said minimum diameter, and an opposite end core portion having a diameter greater than said minimum diameter, and resilient means extending between said outer shell surface and said inner core.

5,192,236

LUBRICATING DEVICE FOR OUTBOARD MOTOR

Kazuhiro Nakamura, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Shizuoka, Japan

Filed Apr. 11, 1990, Ser. No. 507,970
Foreign Application Priority Data April 13, 1989 [JP] Japan, 1-91867
Int. Cl.[5] B63H *5/12*
U.S. Cl. 440—88 7 Claims



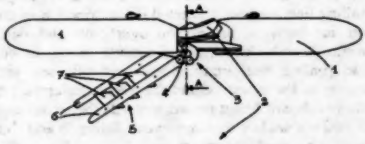
1. A lubricant delivery system for an outboard motor mounted for trim adjustment upon the transom of a watercraft hull, said outboard motor comprising an internal combustion engine and a lubricant system for said engine comprising a lubricant tank carried by said outboard motor and a lubricant pump for pumping lubricant between said tank and another component of the lubricating system, sensing means for sensing a change of the trim of said outboard motor of sufficient magnitude to affect operation of said lubricant system and providing an output signal in response to the sensing of a change, and means for changing the operation of said lubricant pump when said sensing means provides an output signal.

5,192,237

AQUATIC SKI WITH HUMAN PROPULSION GENERATED BY DEAMBULATORY ACTION

Paolo Pegoraro, Via Asolana 22, 31030 S. Vito Di Altivole (TV), Italy

PCT No. PCT/IT90/00015, § 371 Date Aug. 5, 1991, § 102(e) Date Aug. 5, 1991, PCT Pub. No. WO90/09310, PCT Pub. Date Aug. 23, 1990
PCT Filed Feb. 12, 1990, Ser. No. 743,346
Claims priority, application Italy, Feb. 13, 1989, 82508 A/89
Int. Cl.[5] B63B *35/83*
U.S. Cl. 441—76 5 Claims



1. An aquatic ski for human propulsion generated by deambulatory action comprising:

a floatable hull;

a propulsive oscillating means connected to said floatable hull for causing movement of said floatable hull in response to the deambulatory action, said propulsive oscillating means comprising:

a foot seat positioned generally centrally in said hull, said foot seat angularly pivotable relative to said hull; and

a movable fin means in articulated and cooperative connection to said foot seat, said movable fin means angularly pivotable relative to said hull, said movable fin means comprising a plurality of free oscillating vanes pivotally connected between a pair of parallel arms, said oscillating vanes movable between a position aligned with said arms and a position transverse to said

arms, said position transverse being parallel to a flow of water between adjacent vanes, said position aligned being occlusive to a flow of water between adjacent vanes.

5,192,238

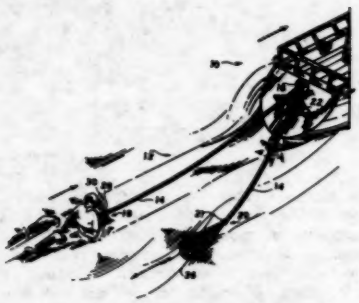
SELF-ACTIVATED MAN OVERBOARD RECOVERY SYSTEM

John B. Brown, 55860 Bredon Rise Ln., Mishawaka, Ind. 46545

Filed Jul. 14, 1992, Ser. No. 918,175

Int. Cl.[5] B63C *9/26*

U.S. Cl. 441—84 **24 Claims**



1. A man overboard activated retrieval system to rescue a person in a body of water from a vessel underway, comprising:

a) a length of line trailing in water from the vessel underway and having a free, distal end and a proximal end;

b) pulley means on the vessel and through which said trailing line is reeved, said pulley means arranged such that said trailing line passes through said pulley means and is movable therethrough in a direction toward the vessel and said trailing line proximal end, and oppositely of said free distal end;

c) container means mounted on the vessel adjacent a stern of the vessel, said container means including openable closure means, said trailing line being operatively associated with said closure means at a portion thereof intermediate said trailing line distal end and said pulley means, whereby upon tension being exerted on said trailing line, said closure means are caused to be opened; and

d) sea anchor means normally housed within said container means and operatively attached to said trailing line proximal end; whereby upon a person overboard grasping said trailing line, tension is exerted on the portion of said trailing line between the person overboard and said pulley means, thereby causing said closure means to open and said trailing line proximal end and said sea anchor to deploy in the water behind the vessel underway, the person overboard being pulled towards the vessel underway as said sea anchor means moves relative to and thus away from the vessel underway.

5,192,239

METHOD AND APPARATUS TO MAKE A DISCHARGE VESSEL FOR A SODIUM HIGH-PRESSURE DISCHARGE LAMP

Wolfram Graser, Munich, Fed. Rep. of Germany, assignor to Patent Treuhand Gesellschaft fur Elektrische Gluhlampen m.b.H., Munich, Fed. Rep. of Germany

Filed Nov. 1, 1991, Ser. No. 786,514

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1990, 4037721

Int. Cl.[5] H01J *9/395*

U.S. Cl. 445—21 **18 Claims**

1. A method of making a discharge vessel of a sodium high-pressure discharge lamp, comprising the steps of

a1) providing a ceramic discharge vessel having two open ends;

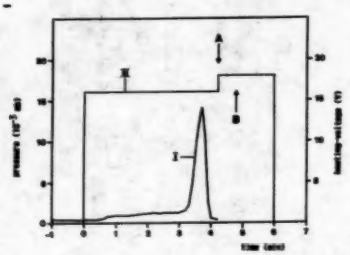
a2) providing two electrode systems and a glass melt or glass solder mass on each system;

b) introducing one of the electrode systems into one open end of the vessel and melt-sealing the electrode system into said vessel by means of the glass melt or glass solder mass to form a subassembly;

c) introducing a fill which includes sodium by introducing NaN_3 through the second end of the vessel;

d1) fitting the second electrode system on the second end of the vessel;

d2) introducing the subassembly into a vacuum chamber;



d3) while the vessel is in the vacuum chamber, heating said second end;

d4) while carrying out the heating step of d3), monitoring the pressure arising in the vessel and sensing the occurrence of a sharp pressure pulse indicative of dissociation of the NaN_3;

e) awaiting decay of the pressure pulse and, while the vessel is in the vacuum chamber, then introducing a noble gas or mixture of noble gases into the vessel;

f) after step d2), melt-sealing the second electrode system to the vessel; and

g) cooling the discharge vessel.

5,192,240

METHOD OF MANUFACTURING A MICROELECTRONIC VACUUM DEVICE

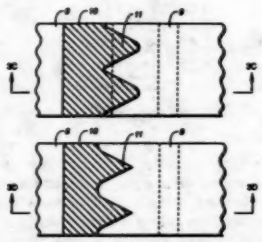
Hiroshi Komatsu, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Feb. 21, 1991, Ser. No. 659,218

Claims priority, application Japan, Feb. 22, 1990, 2-41948; Apr. 11, 1990, 2-96004; Feb. 5, 1991, 3-14398

Int. Cl.[5] H01J *1/02, 9/02*

U.S. Cl. 445—24 **16 Claims**



1. A method of microfabrication for making a planar microelectronic field emission device, comprising the steps of:

a) depositing an insulation layer on the surface of a substrate;

b) depositing a first conductive layer on the surface of the insulation layer;

c) forming a photo-resist pattern on said first conductive layer;

d) etching the first conductive layer using an excess etching method to form a cathode electrode and an anode electrode, said cathode electrode being a serrated cathode electrode having tips;

e) etching the insulation layer using the cathode electrode and anode electrode as an etching mask such that cathode tips for electron emission are exposed by an undercutting of the cathode electrode;

f) depositing a second conductive layer using a directional particle deposition method said second conductive layer being conformally self-aligned to said cathode and anode electrodes; and

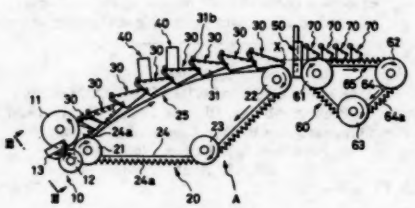
g) etching the second conductive layer to form a gate electrode, said gate electrode being spaced a first distance from said cathode electrode and spaced a second distance from said anode electrode, wherein said first distance is less than said second distance.

5,192,241

APPARATUS FOR DEBONING DARK MEAT OF FOWL

Tateji Saita, Ichara, Japan, assignor to Gordex Corporation, Japan and Geno Gasbarro, Columbus, Ohio

Filed May 26, 1992, Ser. No. 887,834
Claims priority, application Japan, May 29, 1991, 3-124182
Int. Cl.[5] A22C *21/00*
U.S. Cl. 452—135 **4 Claims**



1. A deboning apparatus for deboning dark meat of a fowl, comprising:

a straightening device for straightening "< "-shaped boned dark meat, including a pair of driving rollers mounted for rotation about horizontal axes and disposed such that their roll surfaces oppose each other leaving a predetermined gap therebetween, at least the upper one of said driving rollers being provided with an annular groove formed in the roll surface thereof;

a first conveyor device for conveying the boned dark meat straightened by said straightening device along a predetermined path, said first conveyor device being provided with means for gripping the bone in said dark meat and having a starting end adjacent to said straightening device and a terminal end remote from said straightening device;

a plurality of first bone pressing devices arranged at a predetermined spacing along the path of convey by said first conveyor device;

said first bone pressing device each including a scoring means for scoring said dark meat along the bone, said scoring means having a channel member having sa channel opposing said gripping means of said first conveyor device leaving a predetermined gap therebetween such that said channel extends in the direction of convey by said first conveyor means, said scoring means further having means for urging the leading end of said channel member as viewed in the direction of convey by said first conveyor means towards said gripping means of said first conveyor means;

a scoring device for scoring said dark meat along the bone and disposed at an intermediate portion of the path of convey by said first conveyor means and having a jetting nozzle for jetting pressurized water;

a separation device disposed adjacent to but spaced from said terminal end of said first conveyor device and adapted for jetting pressurized water to separate bone from said dark meat;

said separation device having a ring-shaped nozzle having an axis extending in the direction of convey by said first conveyor means and means for reciprocately rotating said ring-shaped nozzle about its axis, said ring-shaped nozzle being provided with a plurality of jetting ports disposed along a circle on one side surface of said ring-shaped nozzle opposing said ring-shaped nozzle, said plurality of jetting nozzles being located and oriented towards a predetermined point on said axis;

a second conveyor device having a starting end adjacent to said separation device and a terminal end remote from said separation device, said second conveyor device having gripping means for gripping the bone, thereby conveying the bone separated from said dark meat; and

a plurality of spaced second bone pressing devices disposed along the path of convey by said second conveyor device;

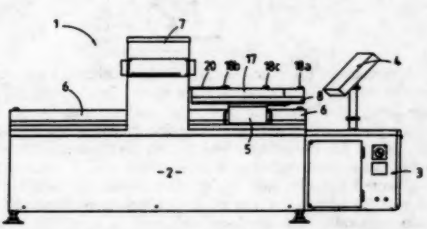
said second bone pressing device each including a channel member opposing said gripping means of said second conveyor device leaving a gap therebetween such that the channel extends in the direction of path of convey by said second conveyor device, and further including means for urging the leading end of said channel member as viewed in the direction of convey by said second conveyor device towards the gripping means of said second conveyor device.

5,192,242

METHOD AND APPARATUS FOR REMOVING MEAT

David A. Sandos, Eneabba, Australia; William F. van Berkum, and Gordon Wickham, both of Hamilton, New Zealand, assignors to The Meat Industry Research Institute of New Zealand Inc., Hamilton, New Zealand

Continuation of Ser. No. 509,674, Apr. 12, 1990, abandoned.
This application Oct. 4, 1991, Ser. No. 771,788
Claims priority, application Netherlands, Apr. 14, 1989, 228761; Jun. 8, 1989, 229449
Int. Cl.[5] A22C *17/04*
U.S. Cl. 452—136 **16 Claims**



1. Mechanical apparatus for the removal of whole-tissue meat from the region of the vertebrae of an animal carcass, said apparatus comprising:

support means which provide support to the bones of the carcass from which meat is to be removed, said support means including locating means for locating the carcass or part of the carcass;

cutting means having a substantial vertical cutting edge which is able, in use, to form a longitudinal cut through the meat to be immediately adjacent to the vertebrae, such cut being along the line of the vertical dorsal protrusions of the vertebrae;

substantially rigid clearing means including a wing which projects laterally relative to the cutting edge and has a leading edge which is generally rearwardly inclined relative to the direction of said longitudinal movement along said carcass, said wing being positioned rearwardly of said cutting edge and substantially below said cutting edge

such that in use it can be located immediately adjacent the lateral protrusions of the vertebrae;

moving means for causing relative movement between said support means and said clearing means such that said clearing means are able to move longitudinally relative to the carcass; and

pressure applying means for causing a pressure directed toward said support means to be applied to said clearing means such that contact occurs between the bones supported by said support and said clearing means so that said clearing means follows the contours of the bones to thereby force the meat away from the dorsal and lateral protrusions of the vertebrae and, if present, at least part of the length of the ribs extending from the vertebrae.

5,192,243

APPARATUS FOR PROCESSING FLATFISH

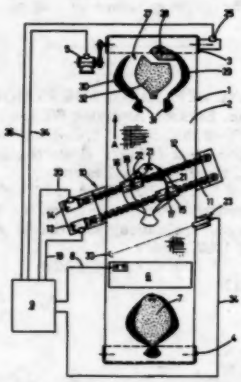
Wilhelmus J. H. Weustink, P.O. Box 16, 1510 AA Oostzaan, Netherlands, assignor to Wilhelmus Josephus Henricus Weustink, Oostzaan, Netherlands

Filed May 21, 1991, Ser. No. 703,462

Claims priority, application Japan, May 31, 1990, 9001240

Int. Cl.[5] A22C *25/14*

U.S. Cl. 452—157 **10 Claims**



1. Apparatus for processing flatfish, comprising a conveyor means for the flatfish, registration means for determining the geometry of the flatfish and their position relative to said conveyor means, a cutting device for cutting loose the head, the dorsal fin, the anal fin and the tail fin from the flatfish in response to said registration means and with a control unit connected between said registration means and said cutting device for processing and storing information obtained from said registration unit for later use.

5,192,244

AIR VENT STOPPER

Kenneth A. Rose, 689 Coleman Ave., Holly Springs, Miss. 38635

Filed Feb. 11, 1992, Ser. No. 833,946

Int. Cl.[5] F24F *13/20*

U.S. Cl. 454—276 **3 Claims**

1. An air vent stopper for a ventilation grill having a plurality of ribs mounted within an opening in a building wall, said air vent stopper comprising:

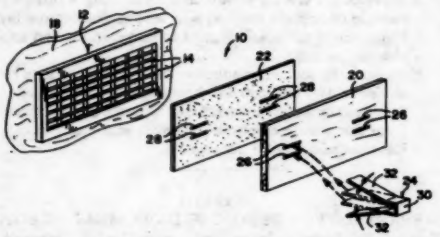
a) a plate being of a size and shape to completely cover over the ribs in the ventilation grill;

b) a gasket being of a same size and shape as said plate for and positioning between said plate and the ventilation grill; and

c) means for removably securing said plate with said gasket to some of the ribs of the ventilation grill, so as to completely seal the ventilation grill from leaking air therethrough during cold weather conditions, wherein said removably securing means includes:

i) said plate having at least two spaced apart slots therethrough;

ii) said gasket having at least two spaced apart slot therethrough aligned with the at least two spaced apart slots in said plate; and



iii) at least one clip-on fastener being a U-shaped having two outwardly extending flared flexible fingers which when squeezed together can be pushed through the at least two spaced apart slots in said plate, the at least two spaced apart slots in said gasket and past through the ribs in the ventilation grill, whereby said two outwardly extending flared flexible fingers will spread apart when released to retain said plate with said gasket thereto.

5,192,245

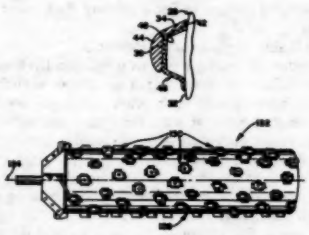
THRESHER ELEMENTS FOR A COMBINE

Robert L. Francis, Moline, Ill., and James W. Minnihan, Racine, Wis., assignors to Case Corporation, Racine, Wis.

Filed Sep. 9, 1991, Ser. No. 756,628

Int. Cl.[5] A01F *12/20*

U.S. Cl. 460—71 **22 Claims**



10. A rotor assembly mounted for rotation within an elongated cylindrical housing in a fore-and-aft relation and secured to a frame of an agricultural combine, said housing having an apertured portion which acts in combination with said rotor assembly to thresh and process crop material, said rotor assembly comprising:

a driven rotor having a generally cylindrical outer wall, the outer wall of said rotor and an inner surface of said housing defining a generally annular space therebetween and through which crop material circulates and advances rearwardly toward an outlet end of the combine; and

a plurality of thresher elements affixed to the outer wall along the length of said rotor, each thresher element projecting into the annular space to impact with and thresh crop materials advancing therethrough, and with each thresher element having fist and second portions, the first portion of each thresher element extending away from the outer wall of the rotor at a swept back angle relative to the direction of rotor rotation, the second portion of the thresher elements extending away from said first portion and about the outer wall of said rotor, the

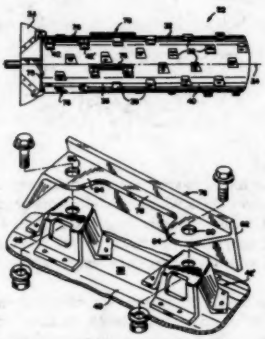
second portion of each thresher element having a material engaging outer area defined by length and width boundaries of the second portion of each thresher element, and wherein the entire outer area of the second portion of the thresher elements being provided with a continuous and smooth surface configuration such that the threshing elements impart substantially no abrading action to the crop materials during the threshing process.

5,192,246

ROTOR ASSEMBLY FOR A COMBINE

Robert L. Francis, Moline, Ill., and James W. Minnihan, Racine, Wis., assignors to Case Corporation, Racine, Wis.

Filed Nov. 15, 1991, Ser. No. 795,930
Int. Cl.[5] A01F *12/20*
U.S. Cl. 460—72 4 Claims



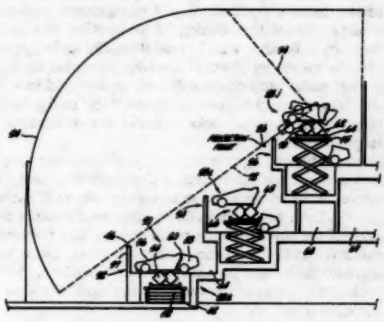
1. An axial-flow rotor assembly for a combine comprising an impeller at one end of said rotor assembly and a generally cylindrical drum axially extending from said impeller and having an elongated axis of rotation, said drum having an outer wall with a plurality of outwardly extending mounting lugs circumferentially secured about and lengthwise along the outer wall of the drum and adapted to have thresher elements secured thereto, the majority of said lugs forming arrays of helical rows extending about the outer wall of the drum to enable said thresher elements to be individually connected thereto to form various orientations to maximize threshing efficiency and separating action, and with a plurality of said lugs being circumferentially secured in corresponding mounting sets about that end of the drum adjacent to said impeller, each mounting set of lugs including at least two lugs linearly spaced apart from each other and being longitudinally aligned relative to each other, with a series of said thresher elements having a linearly extended configuration, each linearly extended thresher element having a length which bridges the linear distance separating linearly aligned lugs of a mounting set and a width extending away form said drum and a material engaging area extending between the length and width of the linearly extended thresher element, the material engaging area of each linearly extended thresher element having a continuous and smooth surface, and means for connecting the linearly extended thresher elements to the mounting sets of lugs such that said linearly extended thresher elements extend generally parallel to the rotational axis of and about the drum to provide a paddle-like mechanism which offers improved control over the material being threshed by the rotor assembly.

5,192,247

RIDE ATTRACTION

Craig K. Barr, Tujunga, Calif., and Peter N. Alexander, Winter Park, Fla., assignors to Universal City Studios, Inc., North Hollywood, Calif.

Continuation of Ser. No. 675,662, Mar. 27, 1991, abandoned.
This application May 28, 1992, Ser. No. 892,402
Int. Cl.[5] A61G *31/16*
U.S. Cl. 472—60 12 Claims



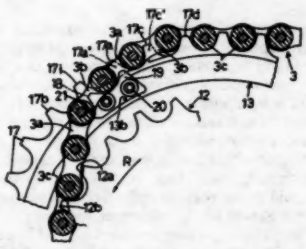
1. A ride attraction comprising:
a projection screen;
a stationary projector for projecting motion pictures on said screen;
a plurality of motion bases, each motion base supporting a viewer platform;
means for elevating each motion viewer vehicle out of a staging room to a viewing position, said motion bases mutually arranged with respect to each other such that a viewer on any motion base can view the screen but not any other viewer platform; and
means for moving each viewer vehicle on its respective motion base in coordination with the motion pictures.

5,192,248

MULTI-STAGE SPROCKET ASSEMBLY FOR BICYCLE

Masashi Nagano, Izumi, Japan, assignor to Shimano, Inc., Osaka, Japan

Filed Aug. 29, 1991, Ser. No. 752,035
Claims priority, application Japan, Jun. 24, 1990, 3-151243; Sep. 4, 1990, 2-234972
Int. Cl.[5] F16H *7/18*
U.S. Cl. 474—140 12 Claims



1. A multi-stage sprocket assembly for a bicycle comprising:
a small sprocket;
a large sprocket disposed coaxially with the small sprocket;
a shift assist projection provided to the large sprocket for assisting a shifting movement of a chain from the small sprocket to the large sprocket;

a guide face for guiding an outer side face of a link plate of the chain,

said guide face being formed in a side face of a second tooth of the large sprocket facing the small sprocket, said second tooth being forwardly adjacent, relative to a moving direction of the chain, a first tooth of the large sprocket which comes into engagement with a leading portion of the shifting chain;

said shift assist projection being so displaced toward the small sprocket that said projection comes into engagement with the shifting chain portion at a position forwardly distant from a position of said engagement between the leading end of the shifting chain portion and said first tooth by a distance which is substantially an integer multiple of a disposing pitch of the large sprocket teeth;

said shift assist projection including an inclined face facing the large sprocket, said inclined face being inclinded closer to the large sprocket relative to a dedendum of the large sprocket;

wherein, when said guide face and said inclinded face come into contact with the shifting chain portion, said contact prevents the chain portion engaging said shift assist projection from being excessively displaced from a shifting path of the entire shifting chain portion and prevents also excessive radial engagement between said chain portion and said shift assist projection so as to render said shifting path non-angular as viewed from the axial direction of the sprocket assembly.

5,192,249

MULTI-STAGE SPROCKET ASSEMBLY FOR BICYCLE

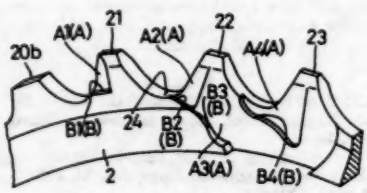
Masashi Nagano, Izumi, Japan, assignor to Shimano, Inc., Osaka, Japan

Filed Feb. 26, 1991, Ser. No. 660,942

Claims priority, application Japan, Feb. 28, 1990, 2-50150; Feb. 28, 1990, 2-50151

Int. Cl.[5] F16H *55/30*

U.S. Cl. 474—160 **14 Claims**



1. A multi-stage sprocket assembly comprising:

a larger diameter sprocket;

a smaller diameter sprocket adjacent to said larger diameter sprocket;

disengagement-facilitating means provided on said larger diameter sprocket, said disengagement-facilitating means operating to facilitate the disengagement of a portion of a chain from said larger diameter sprocket when said chain portion is manipulated to shift from said larger diameter sprocket to said smaller diameter sprocket;

a recessed portion provided on a side face of said larger diameter sprocket facing said smaller diameter sprocket for permitting said chain portion to pass therethrough when said chain portion shifts from said larger diameter sprocket to said smaller diameter sprocket;

a chain supporting portion provided on said larger diameter sprocket for supporting an outer link plate of said chain portion shifted from said larger diameter sprocket, said chain supporting portion including at least one support face provided on said side face of said larger diameter sprocket for directly contacting with and supporting said chain portion; and

teeth of said smaller diameter sprocket being provided with a phase arrangement relative to said chain supporting portion such that said shifted chain portion comes into engagement with said teeth of said smaller diameter sprocket while said chain portion extends substantially straight.

5,192,250

MULTIPLE SPROCKET ASSEMBLY FOR BICYCLE

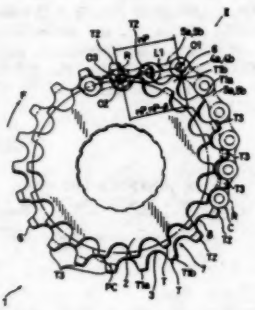
Jun Kobayashi, Osaka, Japan, assignor to Maeda Industries, Ltd., Osaka, Japan

Filed Mar. 9, 1992, Ser. No. 848,044

Claims priority, application Japan, Apr. 23, 1991, 3-122372

Int. Cl.[5] F16H *55/30*

U.S. Cl. 474—162 **12 Claims**



1. A bicycle multiple sprocket assembly comprising at least two adjacent sprockets which include a diametrically smaller sprocket and a diametrically larger sprocket, each sprocket having teeth alternate with furrows for engagement with a chain, each tooth having an apex, each furrow having a bottom;

wherein the teeth of the larger sprocket includes at least one reluctantly disengageable tooth, at least one chain supporting tooth immediately following the reluctantly disengageable tooth with respect to a forward rotational direction of the sprocket assembly, and at least one easily disengageable tooth immediately following the chain supporting tooth with respect to the forward rotational direction, and

wherein the apex of the chain supporting tooth supports the chain at the time of shifting from the larger to smaller sprockets.

5,192,251

TRANSMISSION CHAIN STRUCTURE

Pekka Tuomikoski, Ranua, Finland, assignor to Ketjumyynti Tumikoski Ky, Finland

Filed Oct. 3, 1991, Ser. No. 770,452

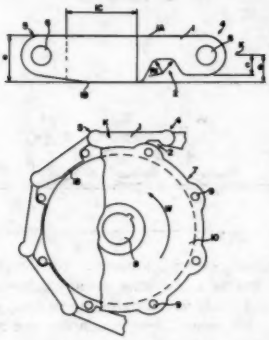
Claims priority, application Finland, Oct. 3, 1990, 904864

Int. Cl.[5] F16H *7/02*

U.S. Cl. 474—206 **16 Claims**

1. A transmission chain structure comprising several form pieces linked together by means of articulation means and a wheel arrangement including at least one drive wheel or a corresponding means for transferring the chain, which is formed on said form pieces linked together by said articulation means, wherein the bearing surface of each form piece consists of at least one opening which is transverse relative to the direction of motion of said chain and which is eccentrically arranged relative to the articulation pitch near one of the articulations, said opening including the contact edge, the bottom and the back edge, whereupon for moving said chain when the chain is in mesh said openings of said form pieces of said chain cooperate with joint pins of said drive wheels the

joint pins being transverse relative to the direction of motion of said chain and being fitted in accordance with the openings and the free length of the joint pins substantially corresponding to the width of the form pieces, the contact area formed during the contact in said mesh of said pins and the openings substantially corresponding in length to the width of the form pieces, whereby, after said contact, said pin leaves the opening of the chain from that end thereof which is on the side of the trailing edge, wherein, during said contact and seen from a direction



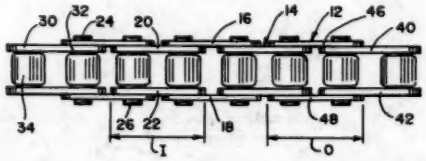
perpendicular to the largest axial cross-sectional area of said pin, the free area of said opening is substantially larger than the cross-sectional area of the corresponding pin, whereupon said contact area is formed on that part of the contact edge of the opening on said bearing surface which joins said bottom, and wherein the largest distance of said contact edge from the center line, which goes through the centers of the holes of said articulations at the ends of the form piece, is substantially larger than the corresponding distance of said trailing edge from said center line.

5,192,252

ROLLER CHAIN WITH RANDOMIZED PITCH

John C. Skurka, Ithaca, and Francis J. Hunter, Rochester, both of N.Y., assignors to Borg-Warner Automotive Transmission & Engine Components Corporation, Sterling Heights, Del.

Filed Oct. 16, 1991, Ser. No. 776,994
Int. Cl.[5] F16G *13/10*
U.S. Cl. 474—210 **26 Claims**



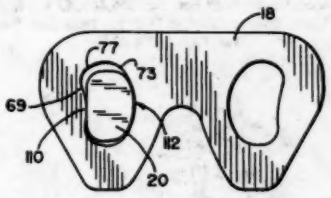
1. A chain for use with a sprocket, said chain having a series of interleaved inner links and outer links;
each outer link having a pair of outer link plates fixedly mounted to spaced pin members;
each inner link having a pair of bushings mounted to turn on said pins of said outer links, said inner links having inner link plates fixedly mounted to said bushings;
a roller mounted to turn on each bushing and adapted to contact the teeth of a sprocket;
each of said inner links and said outer links being adapted to receive a sprocket tooth;
some of said rollers having a first configuration and others of said rollers having a second configuration, said second configuration being different from said first configuration.

5,192,253

SINGLE PIN ROCKER JOINT CHAIN

Edward H. Cole, Jr., Ithaca, and Philip J. Mott, Dryden, both of N.Y., assignors to Borg-Warner Automotive Transmission & Engine Components Corporation, Sterling Heights, Mich.

Filed Oct. 17, 1991, Ser. No. 778,409
Int. Cl.[5] F16G *13/04*
U.S. Cl. 474—214 **30 Claims**



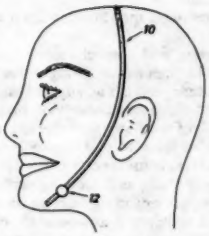
1. A rocker joint for a chain constructed of an assembly of links and pivot members, said chain comprising a plurality of sets of interleaved links, each link having a pair of spaced apertures, the apertures of one link set being transversely aligned with one set of apertures of the next adjacent link set, said apertures being defined by a series of surfaces, at least one of said aperture surfaces being convexly arcuate,
at least one of said pivot members having a substantially flat front surface and a convex back surface, said back surface being defined by a plurality of radii,
said pivot member being received in the apertures of some of said links such that the front surface of said pivot member and said convexly arcuate surface of said link aperture engage and rock on one another,
the back surface of said pivot member being positioned for clearance from said aperture back surface in the chain tight strand as the surfaces move relative to one another before the chain articulates.

5,192,254

FACIAL EXERCISE SENSOR

Sharon Young, 1315 Crossfield, Katy, Tex. 77450

Filed Mar. 2, 1990, Ser. No. 487,765
Int. Cl.[5] A63B *23/03*
U.S. Cl. 482—8 **14 Claims**



1. A sensor device to detect and signal the exercise of a subject's craniofacial and cervical muscles that comprises:
a flexible, semi-rigid, U-shaped band shaped and dimensioned to fit over a portion of a subject's head and face;
a trigger housing adjustably attachable to the band along the length of the band;
a trigger attached to the housing, located to interface between the face and the housing and sensitive to movement

with respect to the band, said trigger not sensitive to gravity;

a signal emitter in communication with the trigger that emits a signal upon the sensing of movement by the trigger; and means for powering the signal sender.

5,192,255

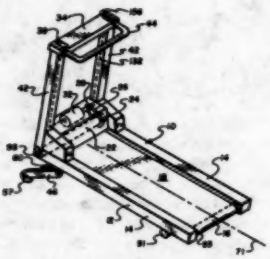
ADJUSTABLE INCLINE SYSTEM FOR EXERCISE EQUIPMENT

William T. Dalebout; S. Ty Measom, and Scott R. Watterson, all of Logan, Utah, assignors to Weslo, Inc., Logan, Utah

Continuation of Ser. No. 494,590, Mar. 16, 1990, abandoned, which is a continuation of Ser. No. 256,486, Oct. 12, 1988, Pat. No. 4,913,396. This application Dec. 12, 1991, Ser. No. 806,977

Int. Cl.[5] A63B *23/06*

U.S. Cl. 482—54 2 Claims



1. A method of adjusting the incline of a treadmill, said method comprising:

providing a treadmill having a first end, a second end, a frame and a walking surface, said treadmill having a support pivotedly connected to said frame proximate said first end of said treadmill, said support having a proximal end adapted for engaging an underlying surface and supporting said treadmill frame above said underlying surface, said treadmill further including an adjustable pneumatic spring pivotedly mounted to said support on one end of said adjustable pneumatic spring and to said frame on an opposing end of said adjustable pneumatic spring, said adjustable pneumatic spring including a control means adapted for controlling a force exerted by said adjustable penumatic spring on said support and said frame by opening and closing a valve contained within said adjustable penumatic spring, said control means being operable by a user standing upright on said walking surface, said treadmill further including an underlying surface engaging fulcrum mounted on said frame proximate said second end of said treadmill;

positioning a user in an upright orientation atop said walking surface;

said user actuating said control means to open said valve, said adjustable pneumatic spring thereby operating to urge said proximal end of said support outward away from said frame and along said underlying support surface, said proximal end of said support thereby applying an upwardly directed force to said treadmill frame and urging said treadmill frame upwardly;

said user walking along said walking surface between said underlying surface engaging fulcrum and said first end of said treadmill to apply a downwardly directed force on said treadmill in opposition to said force being applied by said adjustable pneumatic spring;

said user positioning himself at a location on said walking surface between said fulcrum and said first end of said treadmill to a selected, downwardly directed force on said treadmill sufficient to counteract said upwardly directed force and to position said treadmill walking surface in a selected inclination; and

said user operating said control means from an upright orientation atop said walking surface to close said valve and thereby lock said adjustable pneumatic spring in place to lock said treadmill walking surface in said selected inclination.

5,192,256

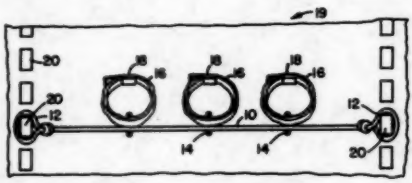
SWIM EXERCISE OR TRAINING APPARATUS

William T. Ryan, 248 Northridge Dr., Landisville, Pa. 17538

Continuation of Ser. No. 644,324, Jan. 22, 1991, abandoned. This application Apr. 29, 1992, Ser. No. 876,116

Int. Cl.[5] A63B *23/00*

U.S. Cl. 482—55 7 Claims



1. A swimmers exercise apparatus kit comprising a user tether means having a pool attachment mechanism means on each end of said tether line, for attachment to opposite ends of a pool, said tether means being continuous and unbroken and having one or more coupling means slidably mounted by ring means on said tether means for movement along the tether line thereof; harness means integrally connected to the coupling means, said harness means for mounting on a swimmer's body, said coupling means providing for selective positioning of one or more swimmers along said line and allowing freedom of a swimmer's arm and leg motion and orientation of the swimmer's body in a direction generally perpendicular to said line and generally within the plane of the surface of water in said pool.

5,192,257

EXERCISE APPARATUS

John E. Panasewicz, Boulder, Colo., assignor to Fittraxx, Inc., Boulder, Colo.

Continuation of Ser. No. 728,188, Jul. 10, 1991, abandoned. This application Apr. 28, 1992, Ser. No. 875,074

Int. Cl.[5] A63B *23/00*

U.S. Cl. 482—70 12 Claims

1. An exercise apparatus comprising in combination:

a frame,

a pair of foot supporting members, slidably mounted on said frame for linear reciprocating movement, each foot supporting member having a first idler pulley thereon,

a pair of hand engaging members slidably mounted on said

frame for linear reciprocating movement in parallel relationship with the movement of said foot supporting members, and

a control system operably interconnecting said foot supporting members and said hand engaging members, said control system including a drive pulley mounted on said frame for reciprocal pivotal movement and a drive belt extending around said drive pulley, said drive belt having opposite ends fixed to said foot supporting members whereby movement of one foot supporting member in a first direction will cause the other foot supporting member to move simultaneously in a second opposite direction, a secondary belt having opposite ends anchored to said frame, said secondary belt being fixed to said hand engaging members for unitary movement therewith and being operably connected to said foot supporting members by frictionally passing around said first idler pulleys on the foot supporting members, and a group of second idler pulleys mounted on said framework around which said secondary belt extends whereby linear reciprocating movement of said foot supporting members causes said hand engaging members to reciprocate at a linear speed of approximately twice the speed of said foot supporting members.

5,152,258

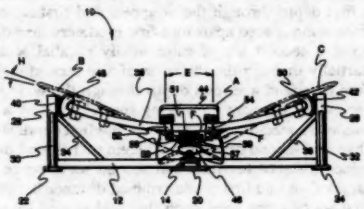
TRAINING DEVICE ESPECIALLY ADAPTED FOR TEACHING SNOW BOARDING TECHNIQUES

Martin Keller, 13880 Wide Acres Rd., Golden, Colo. 80401

Filed Oct. 26, 1990, Ser. No. 603,651

Int. Cl.[5] A63B *22/00*

U.S. Cl. 482—71 **78 Claims**



1. A training device, comprising:

a frame;

an arcuate track secured to said frame, said track having opposite ends disposed at a vertical elevation above an intermediate portion of said track;

at least one support member;

a ball and socket mounting said support member for pivotal movement;

said track lying on a surface of an imaginary sphere having a center at the center of said ball;

said track forming a segment of a circle lying in a plane obliquely inclined to a horizontal plane, said segment being orientated downwardly and outwardly away from said ball such that said track disposes said support member in an orientation obliquely declined to said horizontal plane downwardly and inwardly toward said ball; and

guide means mounting sad support member for movement along said arcuate track.

5,192,259

EXERCISE SYSTEM

Robert A. Budolfson, 18525 Sixth Ave. North, Plymouth, Minn. 55447

Filed Jul. 18, 1991, Ser. No. 731,995

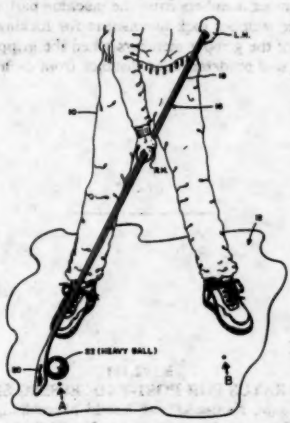
Int. Cl.[5] A63B *21/06*

U.S. Cl. 482—93 **1 Claim**

1. A method for developing and strengthening wrists and hands of a human athlete, said method being adapted to be practiced on a flat hard surface by the athlete and with the athlete operating:

(i) a wooden hockey stick having an elongated handle portion and a double-sided blade portion, each side of the blade portion being flat, and

(ii) a spherically shaped and dense ball, said ball being of steel material and formed by a forging process and having a diameter in the range of 2.5 to 3.0 inches,



whereby the athlete (a) places the ball on the hard surface in front of but proximate to the front of the feet of the athlete and holds the elongated handle portion of the stick with spaced apart hands, and (b) uses the hockey stick to move the ball back and forth on the hard surface by engaging said ball with alternating sides of the blade portion of the hockey stick to thereby accelerate and decelerate the ball, so that, upon the aforesaid ball acceleration and deceleration being repeated by the athlete, a beneficial strengthening of the wrists and hands of the athlete occurs.

5,192,260

APPARATUS FOR TRANSFER OF A MACHINE PART

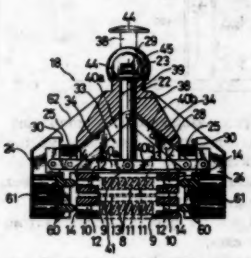
Franco Sartorio; Mario Scavino, and Stefano Vergano, all of Turin, Italy, assignors to Amada Company, Limited, Japan

Filed Nov. 14, 1990, Ser. No. 612,576

Claims priority, application Italy, Nov. 14, 1989, 67998 A/89

Int. Cl.[5] B23Q *3/00*

U.S. Cl. 483—59 **10 Claims**



1. An apparatus for transferring a machine part, comprising:

a frame body;

an opposed pair of machine part gripper members each supported on the frame body, the pair of machine part gripper members being apart from each other by at least a predetermined distance so that the machine part is to be

put therebetween, and being adapted to move toward and away from each other for gripping and disengaging, respectively, the machine part;

a resilient means for biasing the pair of machine part gripper members toward each other, for engagement of the gripper members with the machine part;

a gripper member movement mechanism for moving the pair of gripper members away from each other against the resilient force of the resilient means, for disengagement of the gripper members from the machine part; and

a gripper member lock mechanism for locking the movement of the gripper members when the gripper members are at said predetermined distance from each other.

5,192,261

APPARATUS FOR POST-PROCESSING SHEETS

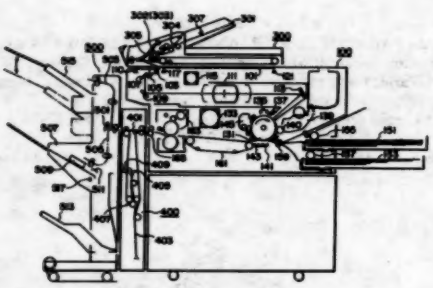
Takeshi Houjo, Kawasaki, and Koichi Murakami, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 511,294, Apr. 19, 1990, abandoned, which is a division of Ser. No. 175,347, Mar. 30, 1988, Pat. No. 4,938,467. This application Sep. 12, 1991, Ser. No. 759,718

Claims priority, application Japan, Mar. 31, 1987, 62-078017; Mar. 31, 1987, 62-078018; Mar. 31, 1987, 62-078023; Apr. 1, 1987, 62-080486

Int. Cl.[5] B31B *1/24*

U.S. Cl. 493—29 21 Claims



6. A sheet processing apparatus comprising:

input means for inputting a signal indicating whether or not sheet processing is to be performed;

sheet processing means for processing sheets in accordance with th signal of said input means;

an ejection unit for ejecting the sheets from said sheet processing means;

a tray for stacking the sheets ejected from said ejection unit;

movement means for moving relatively a position of said ejection unit and a position of said tray to which the sheets are being ejected while the sheets are ejected from said ejection unit; and

control means for controlling said movement means in accordance with the signal input from said input means.

5,192,262

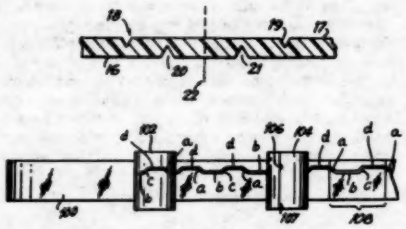
CONTAINER WRAPPERS WITH INTEGRAL TEAR TAPE, AND METHODS AND APPARATUS FOR MAKING SAME

Angel Amendola, Millersville, Md., and Xuan M. Pham, Richmond, Va., assignors to Philip Morris Incorporated, New York, N.Y.

Continuation of Ser. No. 508,227, Apr. 12, 1990, abandoned, which is a division of Ser. No. 342,240, Apr. 24, 1989, Pat. No. 4,938,363. This application Oct. 25, 1991, Ser. No. 782,917

Int. Cl.[5] B31B *1/25*

U.S. Cl. 493—365 16 Claims



1. A method for making a wrapper having an integral tear tape for a container, comprising the steps of:

feeding a web of material having a longitudinal axis, and first and second major surfaces on respective opposite sides of said web member;

scoring a first set of substantially parallel score lines partially through the thickness of said first major surface to extend a first depth through the wrapper, said first set of score lines being spaced apart by a first predetermined distance;

scoring a second set of substantially parallel score lines partially through the thickness of said second major surface to extend a second depth through the wrapper, said second set of score lines being spaced apart by a second predetermined distance, wherein said first depth is greater than said second depth and wherein said second predetermined distance between said second set of score lines is larger than said first predetermined distance between said first set of score lines, such that said second set of score lines straddles said first set of score lines to form an integral tear tape,

wherein said first and second sets of score lines are scored in a longitudinally repeating pattern of first through fourth longitudinal segments, at least two of said segments being parallel to said longitudinal axis and connected to each other by a third segment that is transverse to said longitudinal axis, wherein the connections between said segments are rounded; and

severing completely through said longitudinal web, perpendicular to the longitudinal axis, to form a wrapper;

wherein said integral tear tape formed by said first and second sets of scored lines will not deviate from the path of said pattern.

5,192,263

ELECTROMEDICAL APPARATUS FOR GENERATING LOW-FREQUENCY MAGNETIC FIELDS

Werner Kraus, Augustenstrasse 41, 8000 Muenchen 2, Fed. Rep. of Germany

Filed May 21, 1991, Ser. No. 703,802

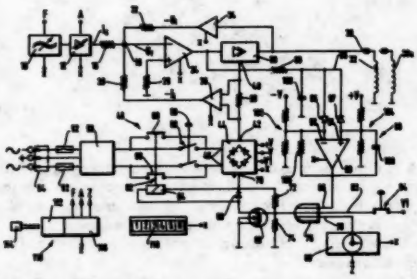
Claims priority, application Fed. Rep. of Germany, May 29, 1990, 9006057[U]

Int. Cl.[5] A61N *1/00*

U.S. Cl. 600—14 7 Claims

1. An electromedical apparatus for generating low-frequency magnetic fields comprising a generator section having a housing (120) and including

a) first means (10) for generating low-frequency electrical oscillations,
b) second means (110) for setting the frequency of the oscillations,
c) third means (12) for setting the amplitude of the oscillations,
d) fourth means for time control (80) for setting the duration of the oscillation generation,
e) a mains unit (44) for generating operating and bias voltages for said first to fourth means and
f) a mains switch (48) for connecting the mains unit (44) to a mains terminal (54), and



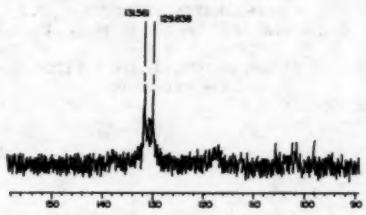
g) sixth means (30) for coupling at least one applicator coil (32) to the generator section for receiving said low-frequency electrical oscillations to generate a low-frequency magnetic field corresponding to the electrical oscillations, wherein the mains switch (48) includes a key switch (56, 58) which is connected between the mains terminal (54) and the mains unit (44) and connects them as long as an activating key (58) is depressed, and a relay (62) which comprises operating contacts (60) connected in parallel with the key switch (56) and a winding fed by the mains unit (44), and the operating and bias voltages are supplied to said mains unit 44 directly without interposition of a further switching device so that the apparatus starts to operate when then mains switch is switched on.

5,192,264

METHODS AND APPARATUS FOR TREATING DISEASE STATES USING OXIDIZED LIPOPROTEINS

Eric T. Fossel, Chestnut Hill, Mass., assignor to The Beth Israel Hospital Association, Boston, Mass.

Continuation-in-part of Ser. No. 418,382, Oct. 6, 1989, abandoned. This application Oct. 4, 1990, Ser. No. 592,553
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—4 **24 Claims**



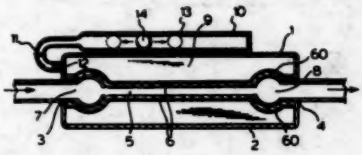
1. A method for treating a disease state characterized by diseased cells with an enhanced uptake of lipoproteins comprising
(a) detecting the disease state,
(b) supplying blood,
(c) providing a container,
(d) introducing blood into the container,
(e) adding oxidized lipoprotein to the blood,
(f) performing a proton and carbon-13 nuclear magnetic resonance analysis of the blood to determine the level of oxidized lipoproteins,
(g) injecting the blood once a therapeutic dose of oxidized lipoproteins is obtained.

5,192,265

ADJUSTABLE-RESISTANCE ANTI-SIPHON DEVICE

James M. Drake; Richard Fox, both of Toronto, and Andre Baboric, Don Mills, all of Canada, assignors to HSC Research & Development Limited Partnership, Toronto, Canada and James M. Drake

Filed Dec. 10, 1990, Ser. No. 625,268
Int. Cl.[5] A61M *27/00*
U.S. Cl. 604—10 **11 Claims**



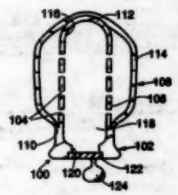
1. An adjustable-resistance anti-siphon device for a cerebrospinal fluid shunt comprising a substantially rigid housing having an internal cavity which contains a first chamber and a second chamber, said first chamber having at least one flexible wall, an inlet port and an outlet port for inflow and outflow respectively of cerebrospinal fluid, said ports passing through apertures in said housing;
said second chamber being gas-filled and being in pressure communication with at least a portion of said at least one flexible wall of said first chamber; and
gas pressure control means connected to said gas-filled chamber whereby the pressure in said gas-filled chamber may be adjusted.

5,192,266

DEVICE AND RELATED METHOD FOR REDUCING SWELLING OF HEMORRHOIDAL TISSUES

Peter J. Wilk, 185 W. End Ave., New York, N.Y. 10023

Continuation-in-part of Ser. No. 837,069, Feb. 18, 1992. This application Jul. 23, 1992, Ser. No. 919,058
Int. Cl.[5] A61M *31/00*
U.S. Cl. 604—11 **8 Claims**



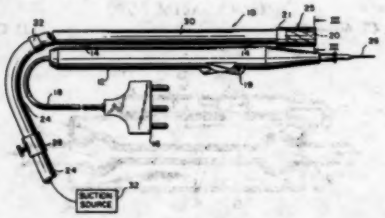
8. A device for the treatment of hemorrhoids, comprising:
a body member capable of being rectally inserted;
a solution inside said body member which is hypertonic with respect to hemorrhoidal tissues; and
an elastic semipermeable membrane defining an outer surface portion of said body member, said membrane being positioned along said body member so that said membrane is in contact with hemorrhoidal tissues upon insertion of said body member into a rectum,
said body member being provided with a closable access means for obtaining access to said body member to replace

diluted hypertonic solution in said body member with new hypertonic solution upon a use of the device.

5,192,267
VORTEX SMOKE REMOVER FOR ELECTROSURGICAL DEVICES

Nadiv Shapira, 5249 LaJolla Hermosa Ave., LaJolla, Calif. 92037, and John T. M. Wright, 10831 Oehlmann Ave., Conifer, Colo. 80433

Continuation of Ser. No. 300,180, Jan. 23, 1989, abandoned. This application Mar. 28, 1991, Ser. No. 678,169
Int. Cl.[5] A61B *17/20*
U.S. Cl. 604—22 **17 Claims**

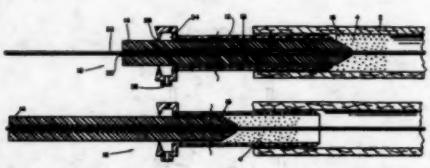


1. An electrosurgical device including a cutting and cauterizing means in electrical communication with an external power source, said cutting and cauterizing means engaged to a tubular housing having vortex means extending up to an end of said tubular housing for creating a vortex at an entrance end of said tubular housing, said tubular housing connected to a vacuum generator for removing smoke created with the cutting and cauterizing means from an adjacent immediate area, and means for turning on and off the vacuum created by said vacuum generator, said means for turning on and off the vacuum located at a distance spaced from an end of said cutting and cauterizing means of said device.

5,192,268
FLEXIBLE THROMBECTOMY SYSTEM

Samuel Shiber, P.O. Box 1366, Atkinson, N.H. 03811

Filed Jun. 27, 1991, Ser. No. 722,126
Int. Cl.[5] A61B *17/22*
U.S. Cl. 604—53 **5 Claims**



1. A process for removing a thrombus from a blood vessel, comprising the following steps:

inserting into the vessel a flexible thrombectomy system comprising a flexible piston, having proximal and distal ends, which is slidably disposed in a flexible catheter which also has proximal and distal ends,

advancing the distal ends of the flexible piston and the flexible catheter to the immediate vicinity of the thrombus,

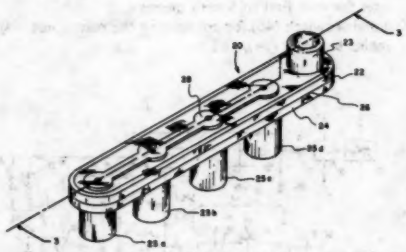
pulling the proximal end of the flexible piston and sliding it proximally relative to the flexible catheter, thereby sucking the thrombus into the flexible catheter,

withdrawing the system containing the thrombus out of the vessel.

5,192,269
MULTI-VALVE MANIFOLD FOR DRUG INFUSION SYSTEMS

Robert G. Poli, Campbell, and Noel L. Johnson, San Jose, both of Calif., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Jul. 24, 1991, Ser. No. 734,828
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—82 **15 Claims**



1. A multi-channel drug infusion system having a plurality of pumping mechanisms, each pumping mechanism having a separate fluid line for delivering fluid under pressure to a respective valve inlet of a multiple inlet manifold for mixing and transporting therethrough fluids under pressure, said manifold comprising:

a manifold body comprising a first member including a plurality of valve inlets, each valve inlet including a respective valve seat, and a second member having at least one outlet said first and second members joined at a manifold body interface;

a mixing chamber provided between the first and second members at the manifold body interface;

and a flexible membrane disposed in the mixing chamber between the first and second members, the flexible membrane comprising separate valve seat portions, each valve seat portion aligned with and overlying a separate valve seat on the first member and held in place by a respective valve interior portion provided on the second member and opposite said valve seat portion to retain each of the valve inlets of the first member normally closed at a respective preset level of inlet pressure, with fluid under pressure exceeding said preset level pressing against a respective valve seat portion to open a respective valve inlet to enable fluid flow into the mixing chamber, each such valve seat portion opening and closing its respective valve inlet independently of the remaining valve inlets to minimize inadvertent mixing of fluids in the chamber or back flow to the inlets.

5,192,270
HYPODERMIC SYRINGE AND A METHOD FOR MARKING INJECTIONS

Donald D. Carswell, Jr., 3100 Merritt Pkwy., Reading, Pa. 19609

Filed Nov. 19, 1990, Ser. No. 615,325
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—116 **9 Claims**

1. A hypodermic syringe including a cylindrical body portion, a needle attached in sealed fluid communication with the body portion and a removable protective cover for the needle which cover is closed at one end and open at the other end to

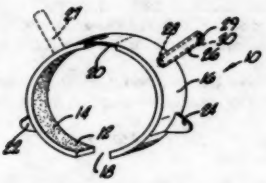
receive the needle, characterized in that a colorant is disposed on one end of the cover, said colorant adapted to print a visible indicia when the one end is pressed against the skin.

5,192,271

DEVICE AND METHOD FOR EFFECTING AN ERECTION

Irvin M. Kalb, 327 Alta Ave., Santa Monica, Calif. 90406; Robert H. Shaw, 243 Peck Dr., Beverly Hills, Calif. 90212, and Michael J. Ram, 1 Horseshoe Rd., Bell Canyon, Calif. 91307

Filed Nov. 25, 1991, Ser. No. 797,319
Int. Cl.[5] A61M *5/00*; A61F *5/00*
U.S. Cl. 604—116 16 Claims



11. A device to aid in the delivery of an erection inducing drug to the penis comprising:

a flexible ring sized to partially encircle a flaccid penis,

the ring having a break therein to aid in properly placing the ring on the flaccid penis and at least one needle guide extending from its surface, said needle guide located above the penile erectile tissue and the break straddling the urethra when properly placed on the penis, the needle guide being angled and oriented so that a syringe needle placed through the needle guide penetrates through the covering skin and into the erectile tissue without penetrating other surrounding tissue.

5,192,272

PACK FOR ADMINISTRATION OF STERILE LIQUIDS INCLUDING PHARMACEUTICAL, NUTRIENT AND ENERGY-SOURCE LIQUIDS

Jean-Marie Faure, 100, avenue du Président Kennedy, 75016 Paris, France

Filed Oct. 25, 1990, Ser. No. 603,323
Claims priority, application France, Oct. 26, 1989, 89 14037
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—141 37 Claims

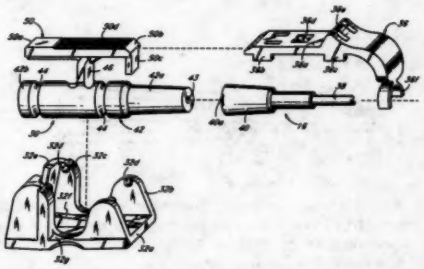
1. A container for administering a flowable substance to a patient comprising wall means defining a first chamber adapted to be at least partially filled with the flowable substance, said first chamber having means defining an opening for supplying the flowable substance to the patient, and means for detecting a leak in said wall means comprising means defining a space contiguous with said wall means for receiving the flowable substance accidentally leaked through said wall means, and a leak indicator medium accommodated in the space responsive to the presence of the leaked-in substance to provide a visible indication that a leak has occurred.

5,192,273

CATHETERIZATION SYSTEM

Steven F. Bierman, 143 Eight St., Del Mar, Calif. 92014, assignor to Steven F. Bierman, Del Mar, Calif.

Continuation-in-part of Ser. No. 384,326, Jul. 24, 1989, abandoned. This application May 4, 1990, Ser. No. 518,964
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—174 14 Claims



7. An apparatus for supporting and facilitating the changing of tubing connected to a catheter, said apparatus comprising:

an adaptor having a tubular body with a forward end configured to connect to a hub of a catheter, and a rear end configured to connect to a tubing; and

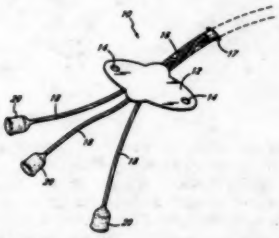
a base for mounting on a patient's skin, said base having a pair of upstanding legs spaced to define a space for receiving said adaptor body, said base legs having detents which fit within an annular groove on said tubular body in a manner permitting rotation of said adaptor about a longitudinal axis of said adaptor tubular body while remaining captured on said base.

5,192,274

ANCHOR PAD FOR CATHETERIZATION SYSTEM

Steven F. Bierman, 143 Eighth St., Del Mar, Calif. 92014

Filed May 8, 1991, Ser. No. 697,640
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—180 10 Claims



1. An anchoring system for securing a catheter to the body of a patient comprising:

a catheter connector comprising a substantially planar seat having at least one suture hole formed therein; and

an anchoring apparatus comprising:

an adhesive member for secure attachment to the body of the patient; and

at least one retention member mounted on said adhesive member, said retention member being configured to insert through said suture hole of said catheter seat and to engage with the catheter seat about the suture hole to prevent accidental disengagement of said catheter from said adhesive member, whereby the catheter seat is attached to the adhesive member.

5,192,275

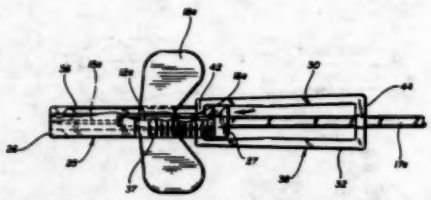
IV INFUSION OR BLOOD COLLECTION GUARD ASSEMBLY

James A. Burns, Elizabeth, N.J., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Sep. 18, 1991, Ser. No. 762,535

Int. Cl.[5] A61M *5/00, 5/32*

U.S. Cl. 604—263 **19 Claims**



1. An IV infusion cover and housing assembly comprising:

a protective cover comprising a rearward and forward end connected by opposite sidewalls, and a top and bottom side connected to said sidewalls;

a housing surrounding said cover, said housing comprising a rearward closed end and a forward opened end with protrusions extending into said housing;

means for advancing said cover out of said housing to a fully extended position; and

means for locking said cover to said housing in the fully extended position.

5,192,276

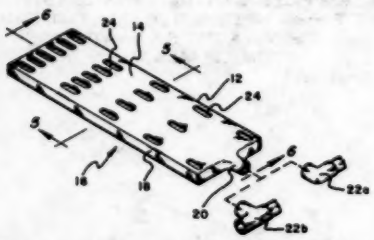
SMOKE ASPIRATING DEVICE

John E. Gatti, 104 Treaty Elms La., Haddonfield, N.J. 08033

Filed Dec. 14, 1990, Ser. No. 627,769

Int. Cl.[5] A61M *1/00*

U.S. Cl. 604—313 **8 Claims**



1. A smoke aspirating device for eliminating smoke generated during electrocautery surgery comprising:

an elongated substantially flat and flexible panel structure having spaced elongated upper and lower panel members with a closed area defined therebetween, said lower panel member having releasable securing means for said panel structure adapted for mounting said panel structure on the anatomy of a patient undergoing electrocautery surgery and said upper panel member having a plurality of spaced apertures therethrough connecting with said closed area wherein the apertures through the upper panel member increase in number from a first end of said panel structure to a second opposite end thereof and there are more apertures located through said upper panel member at the second opposite end thereof than through the first end;

connecting means projecting from said first end of said panel structure and in communication with the closed area in said panel structure;

vacuum connector means for connecting said connecting means to vacuum drawing source means wherein a flow of air is created from above said upper panel member of said panel structure inwardly through the apertures in said upper panel member and the closed area.

5,192,277

DISPOSABLE ABSORBENT ARTICLE

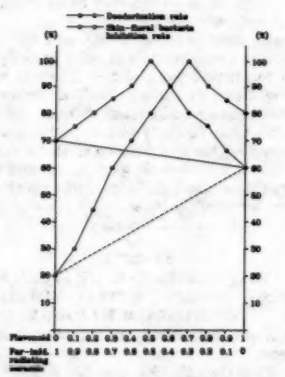
Dae B. Chung; Sung S. Suh, and Chun S. Kwak, all of Cheongju, Rep. of Korea, assignors to LUCKY Ltd., Seoul, Rep. of Korea

Filed Dec. 18, 1991, Ser. No. 810,430

Claims priority, application Rep. of Korea, Dec. 20, 1990, 90-21162

Int. Cl.[5] A61F *13/15*

U.S. Cl. 604—360 **5 Claims**



1. In an improved disposable absorbent article comprising a liquid-permeable top sheet, a superabsorbent polymer core, a fluff pulp layer and a liquid-proof back sheet, the improvement which comprises a mixture of a flavonoid and a far-infrared radiating ceramic incorporated in the top sheet, the polymer core, the fluff pulp layer and/or the back sheet.

5,192,278

MULTI-FIBER PLUG FOR A LASER CATHETER

Gary B. Hayes, Leominster; Carter Kittrell; Martin R. Prince, both of Cambridge, all of Mass.; Jill M. Tobin, Great Neck, N.Y., and Michael S. Feld, Waban, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

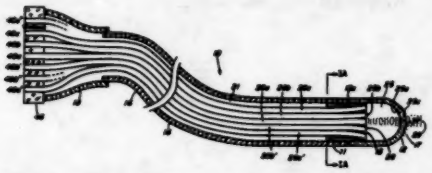
Division of Ser. No. 235,721, Aug. 17, 1988, Pat. No. 4,969,745, which is a continuation of Ser. No. 37,091, Apr. 10, 1987, abandoned, which is a continuation of Ser. No. 715,234, Mar. 22, 1985, abandoned. This application Jun. 13, 1990, Ser. No. 537,925

Int. Cl.[5] A61B *17/32*

U.S. Cl. 606—15 **25 Claims**

1. A laser catheter comprising a flexible tubular catheter, a plurality of optical fibers coaxially disposed within said catheter and bound together at a distal end of said catheter to form a unitary retainer module with a polished distal surface, a rigid optical shield enclosing the distal end of said catheter that is positioned adjacent to the optical fiber retainer module and

adapted to provide a light transmitting enclosure for said catheter in which the distal surface of the optical shield may be brought in contact with material in a body lumen to be treated



by a laser coupled at a proximal end of the catheter to the optical fibers, the optical shield transmitting a diverging beam of laser radiation from each of the fibers onto the material.

5,192,279

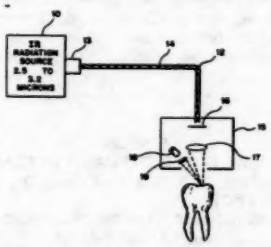
DENTAL TISSUE CUTTING, DRILLING AND FUSING SYSTEM

Mark A. Samuels, and Scott Patterson, both of 4023 Everett Ct., Duluth, Ga. 30136

Continuation of Ser. No. 390,825, Aug. 8, 1989, abandoned. This application Jun. 26, 1991, Ser. No. 725,237

Int. Cl.[5] A61C *5/00*

U.S. Cl. 606—17 **2 Claims**



1. A method for cutting the enamel of a human tooth and removing carious lesions without damaging the nerve and pulp of the tooth, comprising the steps of:

a. providing an Erbium YSGG laser oscillator;

b. projecting a pulsed output from the Erbium YSGG laser oscillator, which pulsed output has (1) a wavelength of approximately 2.79 microns, (2) a pulse width of less than approximately 250 microseconds, (3) an energy of approximately 200 millijoules and (4) a repetition rate of approximately 10 pulses per second;

c. transmitting the pulsed output projected from the laser oscillator to a condensing lens;

c. transmitting the condensed pulsed output via an optical waveguide; and

d. variably convergently irradiating the transmitting pulsed output via a focusing lens upon the enamel to be cut, thereby disrupting the crystal structure of the enamel and exposing the carious lesion for removal.

5,192,280

PIVOTING MULTIPLE LOOP BIPOLAR CUTTING DEVICE

David J. Parins, Columbia Heights, Minn., assignor to Everest Medical Corporation, Minneapolis, Minn.

Filed Nov. 25, 1991, Ser. No. 797,531

Int. Cl.[5] A61B *17/39*

U.S. Cl. 606—48 **13 Claims**

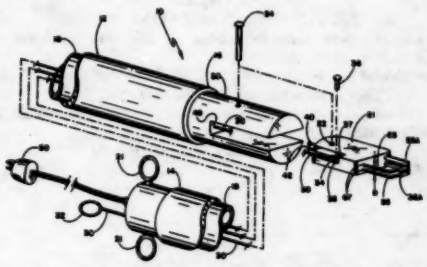
1. An electrosurgical cutting instrument connectable to a power source comprising:

(a) a generally tubular working element having a proximal end, a distal end and a lumen extending therebetween;

(b) a head member comprised of an insulative material pivotally mounted at a pivot point to said distal end of said working element;

(c) a pair of closely spaced bipolar electrodes extending outward from said head member and separated by a dielectric;

(d) a pair of conducting wires, insulated from one another



and each electrically connected at one end individually to one of said pair of bipolar electrodes, the other ends facilitating connection to said power source; and

(e) pull-wire means extending through said working element and connected to said head member for pivoting said head member about said pivot point, said wire means being sufficiently rigid such that motioning said wire means towards and away from said proximal end of said working element creates rotation of said head member about said pivot point.

5,192,281

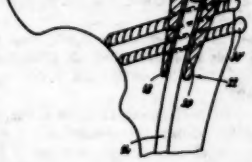
UPPER LOCKING DEVICE FOR CENTROMEDULLARY PINS USED FOR OSTEOSYNTHESIS OF FRACTURES OF THE FEMUR, TIBIA, AND HUMERUS

Jean-Yves de la Caffiniere, Paris, France, assignor to Fixano SA, Bourg en Bresse, France

Filed Jan. 10, 1992, Ser. No. 818,892

Int. Cl.[5] A61B *17/56*

U.S. Cl. 606—59 **10 Claims**



1. An upper locking device for centromedullary pins used for osteosynthesis of fractures of the femur, tibia, and humerus, comprising:

a lock having a generally trapezoidal body having a lower end and an upper end, and a plurality of separate channels, each channel having one blocked end disposed toward the upper end of the body and one open end disposed at the lower end of the body, said body being designed to be introduced into a recess of matching shape provided in a bone to be locked thereto; and

a plurality of elongate pins, each pin having first and second ends, the first end of each pin being adapted for axial introduction in one of the plurality of channels in the lock substantially in the direction of the longitudinal axis of

each pin and the second end of each pin being located opposite the first end and being recurved to immobilize the pin relative to the bone both longitudinally and rotationally, the first end of each of the pins being divergent and being introducible into one of the channels so that the upper blocked end of each channel of the lock opposes the upward and vertical forces transmitted by the pin received in that channel.

5,192,282

SUCTION DRAINAGE-BONE SCREW

Klaus Draenert, Gabriel-Max-Str. 3, DE-8000 München 90, Fed. Rep. of Germany

Division of Ser. No. 541,099, Jun. 20, 1990, Pat. No. 5,047,030. This application Sep. 9, 1991, Ser. No. 756,835

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1987, 3705541

Int. Cl.[5] A61B 17/56; A61F 2/32

U.S. Cl. 606—65 5 Claims

1. A method of establishing therapeutic communication with the interior of a bone, the method comprising:

providing at least one bone screw, each bone screw having a first end and a second end and a continuous bore establishing a communication canal between the first and second ends;

inserting at least the first end of each bone screw into the bone such that each bone screw is firmly anchored in the bone in an essentially vacuum-tight manner; and

delivering substances to or from the interior of the bone through the communication canal of each bone screw.

5,192,283

SYSTEM FOR PERFORMING HIP PROSTHESIS REVISION SURGERY

Robin S. M. Ling; Graham A. Gie, both of 2 The Quadrant, Wonford Road, Exeter, EX2 4LE, England; W. E. Michael Mikhail, 4203 Shamley Green, Toledo, Ohio 43623; James J. Elting, Otsego Orthopaedics, P.C., 35 Academy St., Oneonta, N.Y. 13820, and Tom J. J. H. Slooff, University Hospital, St. Radboud, Th. Craanenlaan 7, Postbus 9101, 6500 HB Nijmegen, Netherlands

Continuation-in-part of Ser. No. 565,149, Aug. 10, 1990, Pat. No. 5,047,035. This application Jul. 23, 1991, Ser. No. 735,524

Int. Cl.[5] A61F 2/36, 5/04

U.S. Cl. 606—93 9 Claims

1. A method of performing revision surgery to replace a previously implanted hip prosthesis having a stem portion previously implanted in a medullary canal of a femur with a new hip prosthesis having a stem portion of predetermined configuration comprising the steps of:

(a) removing said previously implanted hip prosthesis from said femur thereby leaving a space in said femur;

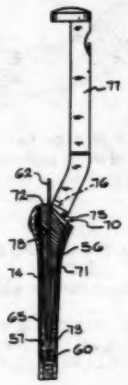
(b) enlarging said space in said femur previously occupied by said previously implanted hip prosthesis to form a cavity larger than the stem portion of the new hip prosthesis to be implanted therein, said cavity having a bottom and an open top;

(c) placing a restricter at the bottom of said cavity, said restricter having a guidewire engaged thereto, said guidewire extending from said restricter to a point beyond said open top;

(d) placing bone graft material in said cavity;

(e) providing a tamp having a stem extending from a proximal end to a distal end and having a configuration similar to said predetermined configuration and having a passageway extending through said tamp stem from said distal end to said proximal end;

(f) placing said tamp over said guidewire with the guidewire extending through said passageway;



(g) impacting said tamp while guided by said guidewire to compact said bone graft material and to form a prosthesis receiving cavity larger than and similar in shape to said predetermined configuration.

5,192,284

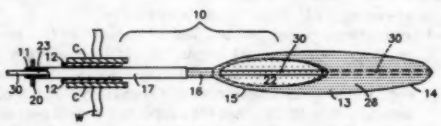
SURGICAL COLLECTOR AND EXTRACTOR

Mark A. Pleatman, 3328 Bloomfield Shore Dr., West Bloomfield, Mich. 48033

Filed Jan. 10, 1992, Ser. No. 818,929

Int. Cl.[5] A61B 17/00

U.S. Cl. 606—114 14 Claims



1. A surgical collector and extractor for specimen collection and removal in a body cavity, comprising:

(a) a substantially tubular elongated cannula having a confining space therein, said cannula being adapted for laparoscopic insertion through an incision into a body cavity and for removal from said cavity through said incision,

(b) a sac of flexible material adapted to be confined within said confining space within said cannula, and having an opening adapted for specimen collection,

(c) means for causing said sac to expand, when not confined, to form a receptacle having a size larger than said confining space, said means for expanding comprising rigidity of said material of said sac enough to hold its expanded shape, but collapsible to be confined within said cannula, and

(d) a handle connected to said sac for displacing said sac into said confining space for specimen collection and for subsequently removing said sac from said body cavity, wherein said handle has an internal passageway extending into said sac.

5,192,285

METHOD FOR INSERTION OF A TRANSPONDER INTO A LIVING BEING

Jeroen J. M. Bolscher, Ootmarsum, Netherlands, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 8, 1991, Ser. No. 773,060
Claims priority, application Netherlands, Oct. 8, 1990, 9002183
Int. Cl.[5] A61D 7/00
U.S. Cl. 606—117 5 Claims

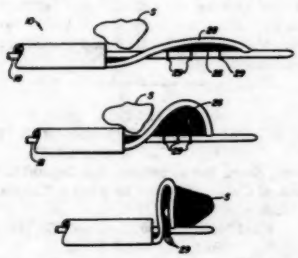
1. A method for insertion of an object into an animal having a lengthwise direction, said animal having ears, and earflaps having frontsides and backsides and central axes, and having cartilago scutiformis which lies along the frontside of the central axis of said earflaps and a base wherein said ears attach to said animal, said method comprising the steps of: inserting a needle-shaped guide along an insertion path to a point lying beneath the cartilago scutiformis and injecting said object with said guide such that said object is lodged beneath the cartilago scutiformis to protect said object from damage or migration.

5,192,286

METHOD AND DEVICE FOR RETRIEVING MATERIALS FROM BODY LUMENS

Cu N. Phan, and Marshall L. Stoller, both of San Francisco, Calif., assignors to Regents of the University of California, Oakland, Calif.

Filed Jul. 26, 1991, Ser. No. 736,173
Int. Cl.[5] A61M 25/00
U.S. Cl. 606—127 26 Claims

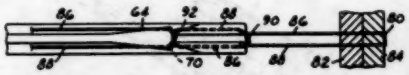


7. A retrieval catheter comprising:
an elongate body having proximal and distal ends;
a pull wire having proximal and distal ends and being slidably mounted within the elongate body, wherein the distal end of the pull wire extends distally of the distal end of the said body;
a flexible loop member, having first and second securing ends, wherein the first securing end is attached to the distal end of the elongate body and the second securing end is attached to the pull wire near the distal end of said pull wire; and
a slack net attached to the flexible loop, whereby the net can be shifted between an open and a closed configuration by axially shifting the pull wire relative to the elongate body.

5,192,287

SUTURE KNOT TYING DEVICE

Donald J. Fournier, North Providence, R.I., and Donald Rose, New Rochelle, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

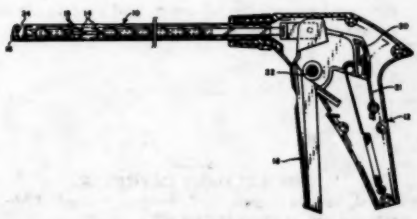
Filed Apr. 5, 1991, Ser. No. 681,577
Int. Cl.[5] A61B 17/00
U.S. Cl. 606—139 9 Claims

1. A device for tying knots in a suture, comprising:
a stationary shaft member having at least first and second fixed prongs at its distal end;
a movable shaft member having a distal head and being slidable between said first and second prongs from a proximal, retracted position to a distal, extended position;
actuation means for moving said movable shaft member from said retracted position to said extended position;
said first and second prongs defining first and second grooves, respectively, each said groove extending along a front surface and a distal part of an outer side surface of said respective prong;
said distal head of said movable shaft member defining a third groove; and
said first and second grooves being shaped to guide a first one-half knot in the suture, and said third groove being shaped to guide a second one-half knot which is tightened against the first one-half knot to form a full knot when said movable shaft member is slid to said extended position.

5,192,288

SURGICAL CLIP APPLIER

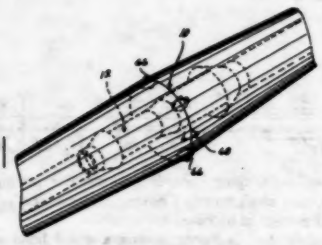
Todd Thompson, San Jose; Terrance Kloecki, Palo Alto, both of Calif.; Peter F. Costa, Winthrop; William A. Holmes, Marblehead, both of Mass., and Jay Daulton, San Jose, Calif., assignors to Origin Medsystems, Inc., San Carlos, Calif.

Filed May 26, 1992, Ser. No. 888,723
Int. Cl.[5] A61B 17/00
U.S. Cl. 606—143 33 Claims



1. Apparatus for applying clips having a pair of connected legs, the apparatus comprising:
a shaft having a distal end and a proximal end;
means for advancing clips along the shaft toward the distal end with the legs oriented in a distal direction;
means at the distal end of the shaft for rotating the clips relative to the shaft to orient the legs in a lateral direction; and
means for closing the legs of the clips after said rotation.

5,192,289
ANASTOMOSIS STENT AND STENT SELECTION SYSTEM
John W. Jensen, Seattle, Wash., assignor to Avatar Design and Development, Inc., Seattle, Wash.
Continuation of Ser. No. 689,669, Apr. 23, 1991, abandoned, which is a continuation of Ser. No. 320,983, Mar. 9, 1989, abandoned. This application Dec. 23, 1991, Ser. No. 814,328
Int. Cl.[5] A61B 17/00
U.S. Cl. 606—155 12 Claims



1. A stent for use in the reconnection of a severed vessel that may carry fluid and that has a first free portion and a second free portion, said stent comprising:

support means for supporting the first and second portions of the vessel, said support means having first and second sections that are insertable into the first and second free portions of the vessel, said first and second sections having first and second outer surfaces and terminating in first and second ends, respectively, said support means including a tube having an inner passage extending between said first and second ends, wherein the outer diameter of said first section of said tube is reduced at said first end and the outer diameter of said second section of said tube is reduced at said second end; and

first and second flanges provided on said first and second outer surfaces of said support means, respectively, to sealably engage the first and second portions of the vessel, said first flange including a first seal surface that defines an obtuse angle with respect to said first outer surface extending toward said first end, said second flange including a second seal surface that defines an obtuse angle with respect to said second outer surface extending toward said second end, said support means and said first and second flanges being made of a material that dissolves when exposed to fluid, allowing the seal between the first seal surface and the first portion of the vessel and the seal between the second seal surface and the second portion of the vessel to vary during use of said stent to minimize trauma to the vessel.

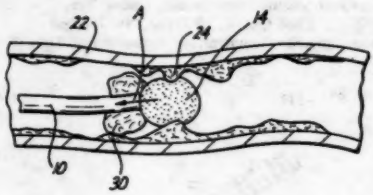
5,192,290
EMBOLECTOMY CATHETER
Said Hilal, Laguna Niguel, Calif., assignor to Applied Medical Resources, Inc., Laguna Hills, Calif.
Filed Aug. 29, 1990, Ser. No. 574,648
Int. Cl.[5] A61M 1/00
U.S. Cl. 606—159 12 Claims

1. A catheter comprising:

a flexible tubular nondistensible catheter body having first and second ends;

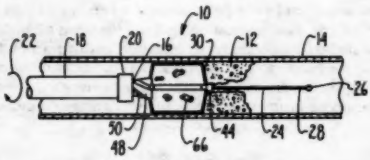
an elastomeric nonwoven foam catheter tip attached to and extending outwardly from the catheter body at the first end;

a retractable flexible stylet extending through said catheter body and being attached to said catheter tip;



wherein operation of said stylet at said second end of the catheter body deforms said elastomeric foam catheter tip at said first end of the catheter body.

5,192,291
ROTATIONALLY EXPANDABLE ATHERECTOMY CUTTER ASSEMBLY
Edward J. Pannek, Jr., Oceanside, Calif., assignor to InterVentional Technologies, Inc., San Diego, Calif.
Filed Jan. 13, 1992, Ser. No. 820,754
Int. Cl.[5] A61B 17/32
U.S. Cl. 606—159 17 Claims



1. An atherectomy cutter assembly having a longitudinal axis, said cutter assembly comprising:

a plurality of blade elements radially spaced about said longitudinal axis, each of said blade elements having a distal end and a proximal end;

a hub at said distal ends of said blade elements wherein said distal ends of said blade elements are fixably connected to said hub; and

an extension tube positioned coaxially with said blade elements, said tube having a plurality of helical slots formed therein extending in a direction of said longitudinal axis and slidably retaining each of said proximal ends of said blade elements.

5,192,292
SURGICAL APPARATUS USEABLE FOR ARTHROSCOPIC SURGERY
Haim Cezana, South San Francisco, and Donald C. Savage, San Jose, both of Calif., assignors to Stryker Corporation, Kalamazoo, Mich.
Filed Nov. 2, 1990, Ser. No. 609,156
Int. Cl.[5] A61B 17/32
U.S. Cl. 606—170 10 Claims

7. In surgical apparatus particularly usable for arthroscopic surgery, a tool adapted for insertion in a hollow, powered handpiece, the tool comprising:

a hollow tool housing having a hollow base mountable on a handpiece and a hollow sleeve extending forward from said base;

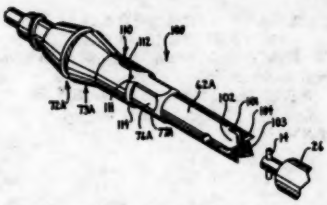
a driven member having a drive shaft drivable by a handpiece and a shaft extension protruding forward from said drive shaft and insertable in said hollow tool housing to extend from said base along said sleeve;

the improvement comprising:

first means on said base for nonrotatably locating said base in

a desired angular position in a first handpiece, said first means including radially outwardly facing noncircular surface means extending forward from the adjacent rear end of said base for fixedly angularly locating said base in a first handpiece;

second means on said base for nonrotatably locating said base in a desired angular position in a second handpiece



structurally different from said first handpiece, said second means being located forward of said first means on said base, said second means including funnel-shaped groove means extending forward from said first means for fixedly angularly locating said base in a second handpiece; such that said tool is alternatively usable in handpieces having structurally differing tool base engaging portions.

5,192,293

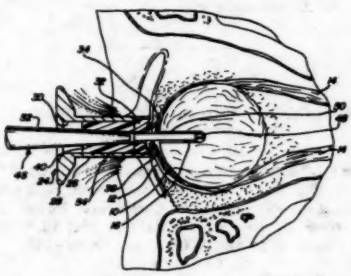
DRILL GUIDE FOR ORBITAL IMPLANT

Mont J. Cartwright, Laguna Niguel, Calif., and Christine C. Nelson, Ann Arbor, Mich., assignors to The Regents Of The University Of Michigan, Ann Arbor, Mich.

Filed Jul. 6, 1992, Ser. No. 909,579

Int. Cl.[5] A61B *17/32*; A61F *2/14*

U.S. Cl. 606—172 **11 Claims**



1. A drill guide for use in drilling a hole in an orbital implant for placement of a prosthesis mounting peg using a surgical drill having a rotating drill burr and a nonrotating drill nose, comprising:

a cylindrical housing assembly defining a proximal end and a distal end, said distal end defining a plurality of axially protruding fixation pegs, said housing assembly further having a central bore extending between said proximal and distal ends,

an adaptor insert having an outer cylindrical surface dimensioned to freely slide into said housing bore and having an inside bore shaped to engage said drill nose, and

stop means for allowing said adaptor insert to be displaced into said housing bore to a predetermined depth whereby when said distal end is placed against said implant and said adaptor insert is placed onto said drill nose, said drill is guided to form a hole in said implant of a limited depth.

5,192,294

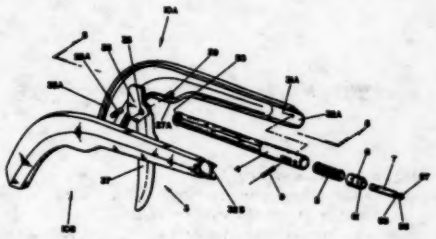
DISPOSABLE VASCULAR PUNCH

Joseph W. Blake, III, 88 Main St., New Canaan, Conn. 06840

Continuation-in-part of Ser. No. 345,995, May 2, 1989, abandoned. This application Jun. 6, 1991, Ser. No. 711,636

Int. Cl.[5] A61B *17/32*

U.S. Cl. 606—184 **34 Claims**



1. A vascular punch for cutting openings in blood vessels comprising a pistol-shaped housing having an opening at the front end thereof; a blade drum provided at said opening of said housing; a punch mandrel having an end thereof passing through said opening in said housing; a trigger having an arm pivot means for pivoting said trigger on said housing,

said housing having port means through which said trigger arm of said trigger can extend outwardly; restraining means in said housing for engaging said punch mandrel; and blade pusher barrel means movably mounted between said trigger and said blade drum, said trigger further comprising a lower portion extending outside of said housing; and an upper portion residing within said housing comprising means for transferring motion to said blade pusher barrel means, said blade pusher barrel means being axially and reciprocally movable within barrel receiving means of said housing, and comprising an elongated cylindrical body comprising means for receiving motion transferred from the upper portion of said trigger, cavity means to contain said blade drum and said punch mandrel, opposing elongated longitudinal slots through which said punch mandrel restraining means passes to engage said punch mandrel, said punch mandrel further comprising an elongated cylindrical rod having a transverse hole therethrough to receive said punch mandrel restraining means and a reduced stem at its distal end terminated by a circular mandrel disc normal thereto, said blade drum comprising a hollow cylindrical body having a longitudinal lumen for passage of said punch mandrel therethrough; and blade means for cooperating with said circular disc of said punch mandrel to form said opening in the blood vessel, said restraining means preventing movement of said punch mandrel when said blade pusher barrel means and said blade drum move axially and reciprocally; and restoring means for restoring said trigger to a normal position after use.

5,192,295

ANGIOPLASTY DILATATION BALLOON CATHETER/GUIDEWIRE SYSTEM

John W. Danforth, San Francisco; Jeff L. Kraus; Michael J. Horzewski, both of San Jose, and Hugh R. Sharkey, San Francisco, all of Calif., assignors to Danforth Biomedical, Inc., Menlo Park, Calif.

Filed Jun. 20, 1990, Ser. No. 540,957

Int. Cl.[5] A61M *29/00*

U.S. Cl. 606—194 **13 Claims**

1. A dilatation balloon catheter/guidewire system, comprising:

an outer member comprising a tubular catheter shaft and a

balloon secured to the distal end of said tubular catheter shaft;

an inner tubular member extending through said balloon and secured to said outer member proximally and distally relative to said balloon; and

a guidewire extending through said tubular catheter shaft and said inner tubular member, said guidewire containing at least a first section and a second section proximal to, and of larger diameter than, said first section;

said inner tubular member being:

non-axially-collapsible and thereby maintaining said balloon in an axially extended condition, and

resiliently radially expandable from a reduced-diameter condition sufficiently wide to receive said first section of said guidewire but not said second section, to an expanded-diameter condition sufficiently wide to receive said second section.

5,192,296

DILATATION CATHETER

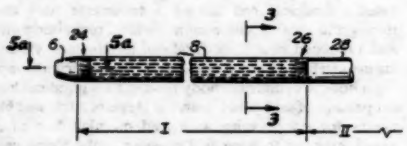
Anandkumar Bhate, St. Louis, Mo., and David Catlin, Middletown, N.J., assignors to Meadox Medicals, Inc., Oakland, N.J.

Continuation of Ser. No. 400,631, Aug. 30, 1989, Pat. No. 4,994,072, which is a continuation-in-part of Ser. No. 239,081, Aug. 31, 1988, Pat. No. 4,896,667. This application Nov. 29, 1990, Ser. No. 619,623

The portion of the term of this patent subsequent to Jan. 30, 2007, has been disclaimed.

Int. Cl.[5] A61M *29/00*

U.S. Cl. 606—194 **15 Claims**



1. A dilatation catheter, comprising:

a length of a hollow shaft with an inner passageway for inflating the balloon, the hollow shaft formed of flexible material having a longitudinal axis and a first diameter;

a balloon portion formed at one end of the flexible shaft of flexible material, and communicating with the inner passageway the balloon portion being capable of expanding to a predetermined diameter when subjected to internal pressure to provide a balloon having a greater diameter than the first diameter;

the balloon portion formed from a substrate and a fluid impermeable elastomer on the substrate to provide a smooth outer surface, the substrate formed with circumferential crimps running length-wise about the circumference of the balloon portion; and

a transition portion at each end of the balloon portion for coupling the balloon portion to the flexible shaft, the transition portions being capable of longitudinal extension in response to minor longitudinal contraction of the balloon portion when the balloon portion is inflated.

5,192,297

APPARATUS AND METHOD FOR PLACEMENT AND IMPLANTATION OF A STENT

Vincent W. Hull, Fridley, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Dec. 31, 1991, Ser. No. 815,449

Int. Cl.[5] A61F *2/06*

U.S. Cl. 606—195 **7 Claims**

1. Apparatus for placement and implantation of a stent, the apparatus comprising in combination:

a catheter having proximal and distal ends,

an elongate cylindrical outer sheath enclosing a distal portion of the catheter,

a balloon on the catheter being adapted for inflation and deflation in site,

a radially self-expandable stent of generally cylindrical configuration carried coaxially on the catheter in a distal position with respect to the balloon and enclosed within the sheath, and

means for distally ejecting the stent from the sheath, whereby the stent may be positioned at a selected implant site by placement of the distal end of the catheter and ejected out of the sheath in a distal direction to position it at the selected site followed by insertion of the balloon coaxially in the stent and expansion thereof to implant the stent at the selected site.

5,192,298

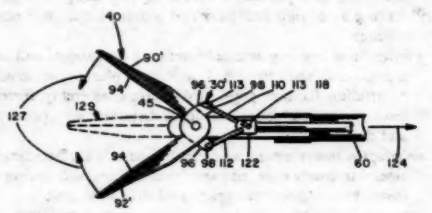
DISPOSABLE LAPAROSCOPIC SURGICAL INSTRUMENTS

Kevin W. Smith, Miami; Charles R. Slater, Fort Lauderdale; Gregory J. Murphy, Sunrise; Thomas O. Bales, Coral Gables; John W. Box, Miami, and Frank A. Scarfone, Boca Raton, all of Fla., assignors to Symbiosis Corporation, Miami, Fla.

Continuation-in-part of Ser. No. 521,766, May 10, 1990. This application Apr. 4, 1991, Ser. No. 680,392

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—205 **19 Claims**



1. A surgical instrument for insertion through a trocar tube, comprising:

a) a hollow tube having a first end and a second end and a longitudinal axis;

b) a clevis means separately formed from said tube and mechanically coupled to said first end of said tube, said clevis means having first rotation means substantially transverse to said longitudinal axis;

c) two end effector means for grasping, cutting, clamping, dissecting, or extracting, one of said end effector means having a first hole for receiving said first rotation means and for pivotally engaging said clevis means at said first rotation means, and a second hole substantially parallel to said first hole;

d) a rod extending at least partially through said hollow tube and having a first end and a second end, said rod having a third hole;

e) a unitary resilient staple-like connecting means linking said first end of said rod with said end effector means having said first and second holes, said unitary resilient staple-like connecting means having a first terminal portion pivotally engaging said third hole of said rod, an oppositely extending second terminal portion pivotally engaging said second hole of said end effector means having said first and second holes, and a substantially U-shaped middle portion coupling said first and second terminal portions; and

f) actuating means engaging said second end of said rod for imparting reciprocal motion to said rod relative to said tube which is translated at said clevis means to pivotal motion of said end effector having said first and second holes.

5,192,299

Patent Not Issued For This Number

5,192,300

INSERTION ASSEMBLY AND METHOD OF INSERTING A VESSEL PLUG INTO THE BODY OF A PATIENT

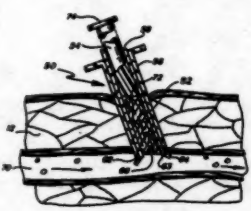
Bradford C. Fowler, Woodinville, Wash., assignor to Quinton Instrument Company, Seattle, Wash.

Continuation of Ser. No. 591,342, Oct. 1, 1990, Pat. No. 5,108,921. This application Jan. 28, 1992, Ser. No. 826,719

Int. Cl.[5] A61B *17/09*

U.S. Cl. 606—213 **16 Claims**

1. An insertion assembly for sealing an incision formed in the body of a patient wherein the incision extends from the skin of the patient into a selected blood vessel of the patient, said insertion assembly comprising in combination:



a vessel plug constructed of a material which is absorbable within the body of a patient and having distal and proximal ends and wherein said vessel plug is an elongate member which is dimensioned to be received in the incision such that said distal end is sized to be located at a predetermined position in the incision proximally of the blood vessel of the patient and the remainder of said vessel plug extends proximally therefrom in the incision after insertion, and

a removable positioning means operatively associated with said vessel plug for assisting in the positioning said distal end of said vessel plug in said predetermined position.

5,192,301

CLOSING PLUG OF A DEFECT FOR MEDICAL USE AND A CLOSING PLUG DEVICE UTILIZING IT

Tetsuro Kamiya, Suita; Shigeyuki Echigo, Toyonaka; Takehisa Matsuda, Mino; Ryuichiro Yoda, Yokohama, and Nobuko Satoh, Kawasaki, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Sep. 3, 1991, Ser. No. 754,163

Related U.S. Application Data Continuation of Ser. No. 460,273, July 2, 1990, ABN.

Claims priority, application Japan, Jan. 17, 1989, 1-7916

Int. Cl.[5] A61B *17/04*

U.S. Cl. 606—213 **12 Claims**

1. A closing plug for closing an opening in a body part of a living body, said opening in said body part including one of a patent ductus arteriosus (PDA), atrial septal defect (ASD), ventricular septal defect (VSD), aneurysm and varix, said opening having a rim defining a boundary of said opening, and said body part having an interior surface and an exterior surface adjacent said rim of said opening, the closing plug comprising:

a body portion having opposite end portions; and

an enlarged portion at each opposite end portion of said body portion, said enlarged portions each having a predefined size and shape which is larger than said opening to be closed and larger than a cross sectional size of said opening to be closed; and

wherein at least said enlarged portions are made of a shape memory polymer having a shape recovery temperature in the range of from 20° C. to 70° C., such that at least said enlarged portions are physically able to be reduced in size to a size to freely pass through said opening without further enlarging said opening, prior to introduction into said opening in the body part, and are able to be enlarged to their respective original predefined larger size and shape after insertion through said opening in said body part and after exposure to a temperature within said shape recovery temperature range so that said enlarged portions contact said interior surface and exterior surface, respectively, of said body part adjacent said rim of said opening to close said opening and to prevent said closing plug from coming out of said closed opening;

said closing plug having a narrow through-hole therein, which extends between each of said enlarged portions and which provides effective closure of said opening of said body part, and through which a guide wire is passable between each of said enlarged portions.

5,192,302

PLUG DEVICES FOR SEALING PUNCTURES AND METHODS OF USE

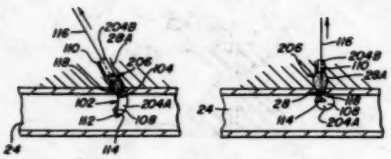
Kenneth Kensey, Chester Springs, and John Nash, Downingtown, both of Pa., assignors to Kensey Nash Corporation, Exton, Pa.

Continuation-in-part of Ser. No. 445,315, Dec. 4, 1989, Pat. No. 5,061,274. This application Oct. 28, 1991, Ser. No. 783,645

Int. Cl.[5] A61B *17/04*

U.S. Cl. 606—213 **32 Claims**

1. A closure device for sealing a small incision or puncture i tissue separating a first internal portion of the body of a living being from a second internal portion thereof to prevent the flow of bodily fluid therebetween, said incision or puncture comprising a track portion extending through said first internal portion, said closure device comprising plug means and retraction means, said plug means comprising a generally elongated member having a central longitudinal axis, a distally located portion and a proximally located portion, said distally located portion of said elongated member being deformable and including a free end, said retracting means comprising a filament secured to said distally located portion of said plug means adjacent the free end thereof, said filament being connected to said distal portion of said elongated member adjacent the free end thereof and said filament having a first portion extending



laterally of said central longitudinal axis of said elongated member along a first part of said distal portion of said elongated member for a portion of the length of said elongated member and said filament also having a second portion extending along a second part of said elongated member and closer to said central longitudinal axis of said elongated member than said first portion of said filament, said second portion of said filament extending out said proximal portion of said elongated member, said closure device being arranged to be positioned so that said distally located portion of said elongated member is disposed within said first internal portion of said body of said living being while said proximal portion of said elongated member is disposed within said track, and with said filament extending through said incision or puncture, said filament being arranged to be pulled to deform said distal portion of said plug means so that it cannot pass back through said incision or puncture and so that said incision or puncture is sealed by said deformed distal portion of said plug means.

5,192,303

SUTURE ANCHOR

Roland F. Gatturna, Walpole; James E. Nicholson, Lincoln, and James O'Leary, Medford, all of Mass., assignors to Mitek Surgical Products, Inc., Norwood, Mass.

Continuation of Ser. No. 711,145, Jun. 6, 1991, abandoned, which is a continuation of Ser. No. 439,452, Nov. 20, 1989, Pat. No. 5,046,513, which is a continuation of Ser. No. 51,367, May 18, 1987, Pat. No. 4,898,156. This application Mar. 18, 1992, Ser. No. 853,261

Int. Cl.[5] A61B *17/00*

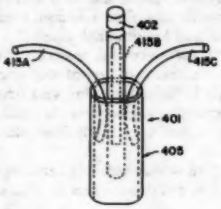
U.S. Cl. 606—232 **15 Claims**

1. A post and post anchor assembly for attaching a post to bone, said post and post anchor assembly comprising:

(a) a post having a first end and a second end;

(b) a coupling member; and

(c) at least one barb, said barb having a first end and a second end and being curved in its normal unstressed state and being capable of being elastically deformed to a substantially straight length when desired, said barb extending transversely from said coupling member so that said sec-



ond end of said barb is substantially laterally spaced from said coupling member when said barb is in its normal unstressed state but is capable of being aligned with said coupling member when said barb is deformed to a substantially straight length, and said post being attached to said coupling member at said first end of said post so that said second end of said post is free for use in attaching objects to a bone when said post anchor is anchored in said bone.

5,192,304

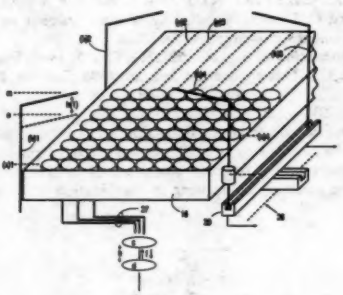
APPARATUS FOR MANIPULATING BACK MUSCLES

William R. Rassman, 29391 Laro Dr., Agoura, Calif. 91301

Filed Jun. 17, 1991, Ser. No. 716,137

Int. Cl.[5] A61H *9/00*; A47C *27/10*

U.S. Cl. 606—238 **9 Claims**



5. Apparatus for manipulating the bones, joints and muscle groups of the human back, said apparatus comprising a frame a planar array of pockets mounted on said frame on which a patient may be placed, each of said pockets having a cross sectional area which is small with respect to the surface area of the back;

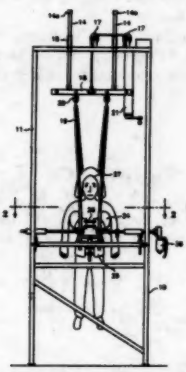
locator means attached to said frame and spaced from said array for determining fixed skeletal reference positions of said patient and control means connected to said locator means for obtaining an initial equal force contour for said array of pockets with respect to said reference positions wherein said control means repetitively alter the vertical dimensions of individual ones of said pockets from respective positions defined by said initial equal force contour to impart a cyclical pattern of forces to said back of said patient.

5,192,305

PROCESS AND APPARATUS FOR PHYSIOTHERAPY IN SCOLIOSIS AND DEVIATIONS OF THE RACHIS IN GENERAL

Santos F. Sastre, Balmes no. 89 -30 1a, 08008 Barcelona, Spain

Filed Jun. 14, 1991, Ser. No. 714,185
Claims priority, application Spain, Jun. 15, 1990, 9001779
Int. Cl.[5] A61H *1/02*
U.S. Cl. 606—241 8 Claims



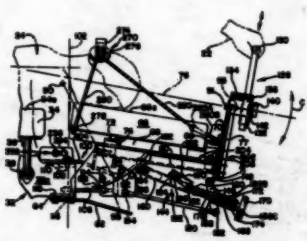
1. Apparatus for treating scoliosis and deviations of the human spinal cord in general comprising an upright main frame, suspension means for suspending a patient in the main frame under gravity, immobilization means connected with the main frame for gripping the patient's torso to substantially immobilize the patient when suspended and force-applying means associated with the main frame for applying a substantially horizontally directed pressure force to a selected area of the patient's spinal cord while the patient is suspended and immobilized, wherein the suspension means includes a cross-bar attached to the frame, a patient-fitting harness, and straps suspending the harness from the cross-bar.

5,192,306

CHIROPRACTIC MANIPLUATION TABLE WITH FLEXION/DISTRACTION HEADPIECE

Gerald R. Scott, Elmhurst, Ill., and James M. Cox, Fort Wayne, Ind., assignors to Standex International, Salem, N.H.

Filed Apr. 4, 1991, Ser. No. 680,309
Int. Cl.[5] A61H *1/02*
U.S. Cl. 606—243 24 Claims



1. A treatment table for supporting a patient while lying in a face down generally horizontal prone position for chiropractic manipulation of the patient's spine said table comprising:

a base projecting upwardly of the floor toward a convenient working level;

first support means on said base having an upwardly facing first support surface for supporting a patient's body below the neck while lying on said table for treatment adjacent said working level;

second support means having an upwardly facing second support surface for supporting the patient's neck and head and spaced apart from said first support surface along a central longitudinal axis of said table; and

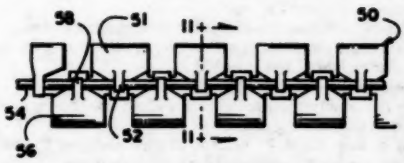
first pivot means for pivotally interconnecting said first and second support means for controlled relative rotational movement about a first axis extending generally horizontal and transverse with respect to said central longitudinal table axis, said first axis positioned at a level spaced above and proximate to said first support surface wherein said first axis is positioned substantially at or beneath the level of the patient's spine while lying on said table.

5,192,307

ANGIOPLASTY STENT

W. Henry Wall, 5139 Jimmy Carter Blvd., Ste. 201, Norcross, Ga. 30071

Division of Ser. No. 129,834, Dec. 8, 1987. This application Feb. 5, 1992, Ser. No. 831,354
Int. Cl.[5] A61F *2/04*
U.S. Cl. 623—1 7 Claims



4. An implantable prosthesis for use in maintaining an opening within an artery, said prosthesis comprising a generally cylindrical sleeve having a wall, said wall defining a gap longitudinally thereof for allowing said sleeve selectively to assume a first position wherein said wall moves inwardly for providing a collapsed diameter of said sleeve, and a second position wherein said wall moves outwardly for providing an expanded diameter of said sleeve, means for urging said wall in one direction towards either said collapsed diameter or said expanded diameter, and locking means for preventing motion of said wall by said means for urging said wall in one direction, said wall having a bottom, a top diametrically removed from said bottom, and comprising a plurality of segments, a spine extending longitudinally of said sleeve along said bottom of said sleeve, each segment of said plurality of segments extending from said spine, around one side of said sleeve and to said top of said sleeve, said plurality of segments being spaced apart along each side of said spine so that said sleeve is longitudinally bendable.

5,192,308

VASCULAR PROSTHESIS WITH AN ELASTOMER COATING

George J. Ostapchenko, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 19, 1991, Ser. No. 687,673
Int. Cl.[5] A61F *2/06*
U.S. Cl. 623—1 10 Claims

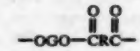
1. A process for making a vascular prosthesis, said process comprising the following sequential steps:

(i) wetting with water a porous tubing made of polyester fibers for a sufficient time to cause the tubing to pick up water in an amount close to the maximum absorbable weight thereof;

(ii) removing excess water from the inside surface of the tubing, while still leaving water droplets in the interstices between the fibers forming the tubing;

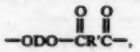
(iii) briefly contacting the inside surface of the tubing with a

solution of a copolyetherester consisting essentially of a multiplicity of recurring intralinear long chain and short chain ester units connected head-to-tail through ester linkages, such long chain ester units being represented by the following formula (I):



(I)

and short chain units being represented by the following formula (II):



(II)

where G is a divalent radical remaining after the removal of terminal hydroxyl groups from a poly(alkylene oxide) glycol having an average molecular weight above about 400 and a ratio of the number of alkylene oxide carbon to oxygen atoms of 2.5 to 4.3, preferably 2.5 to 3.5, and a melting point below about 60° C.;

D is a divalent radical remaining after the removal of hydroxyl groups from a diol having a molecular weight of less than about 250; and

R and R′ are divalent radicals remaining after the removal of carboxyl groups from a dicarboxylic acid having a molecular weight of less than 300;

with the proviso that

(a) the copolyetherester contains about 23–82 weight percent of repeating units (II);

(b) at least about 80 percent of the combined R and R′ groups R+R′) are 1,4-phenylene groups; and

(c) at least 80% of D groups in formula (II) are 1,4-butylene groups;

with the further proviso that the total percentage of (R+R′) groups which are not 1,4-phenylene groups and of D groups which are not 1,4-butylene groups is at most 20%;

in a solvent or combination of two or more solvents which are not miscible with water and removing excess of that solution beyond what remains absorbed on the inside surface of the tubing;

(iv) removing solvent from the thus adsorbed solution to form an elastomer coating on the inside surface of the tubing, and determining elastomer add-on; and

(v) repeating steps (iii) and (iv) to the extent required to obtain sufficient add-on of elastomer to form a substantially continuous, nonporous coating on the inside surface of the tubing.

5,192,309

PROSTHETIC HEART VALVE

Jonathan C. Stupka; Jack C. Bokros; Michael R. Emken, all of Austin; Axel D. Haubold, Liberty Hill, and T. Scott Peters, Georgetown, all of Tex., assignors to Onx, Inc., Austin, Tex.

Continuation-in-part of Ser. No. 674,871, Mar. 25, 1991, Pat. No. 5,152,785. This application Feb. 18, 1992, Ser. No. 837,761

Int. Cl.[5] A61F *2/24*

U.S. Cl. 623—2 **20 Claims**

1. A prosthetic heart valve including

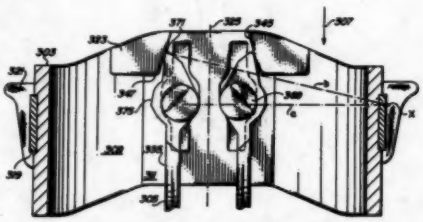
a generally annular valve body having an interior wall which defines a central passageway, having a longitudinal axis, for blood flow therethrough,

occluder means having an inflow surface and an outflow surface, said occluder means being mounted in said valve body to alternate between an open position where the flow of blood therethrough is permitted in a downstream direction generally parallel to said longitudinal axis, and a closed position where the flow of blood in the reverse direction is blocked, said inflow surface facing generally upstream and said outflow surface facing generally downstream with said occluder means in the closed position, and

a pivot arrangement by which said occluder means is guided in sliding-pivoting movement between said open position and said closed position,

said pivot arrangement including projection means which extends generally radially inward from said valve body interior wall and is located where a portion of said occluder means lying generally along said inflow surface will slidingly engage said projection means at a first location on said valve body during the closing movement of said occluder means,

said pivot arrangement also including interengaging elements on said valve body and on said occluder means, which elements interengage at a second location and



cooperate with said projection means in guiding the closing movement of said occluder means,

said projection means being positioned so that said sliding engagement between said occluder means and said projection means at said first location is axially upstream of said second location wherein the interengaging contact occurs between said interengaging elements,

whereby said sliding engagement between said projection means and said occluder means in combination with said contact between said interengaging elements, as said occluder means is being displaced upstream at the beginning of the reverse flow of blood through said central passageway, is such as to cause said occluder means to immediately begin to pivot about a shifting axis toward said closed position.

5,192,310

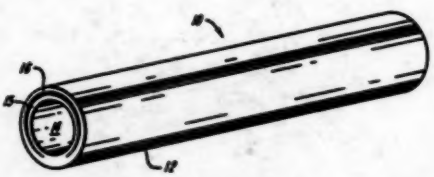
SELF-SEALING IMPLANTABLE VASCULAR GRAFT

Steve A. Herweck, Nashua; Theodore Karwoski, Hollis, and Paul Martakos, Pelham, all of N.H., assignors to Atrium Medical Corporation, Hollis, N.H.

Filed Sep. 16, 1991, Ser. No. 760,718

Int. Cl.[5] A61F *2/04*

U.S. Cl. 623—1 **11 Claims**



1. A self-sealing implantable prosthetic device for connection to a fluid flow pathway of a patient, the device comprising

a. an implantable body of unitary construction adapted for attachment to said fluid flow pathway, said body defining a primary lumen for accommodating fluid flow therethrough and a secondary lumen sharing a common side wall with said primary lumen, each of the lumina being

bounded by a single, continuous surface provided by the body; and

b. a non-biodegradable self-sealing elastomeric material disposed in said secondary lumen.

5,192,311

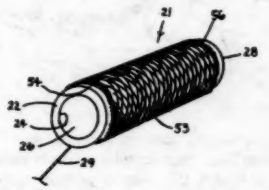
MEDICAL IMPLANT AND METHOD OF MAKING

Wendell L. King, North Oaks; Lawrence M. Kane, Roseville, and Theodore P. Adams, Edina, all of Minn., assignors to Angeion Corporation, Plymouth, Minn.

Continuation of Ser. No. 186,002, Apr. 25, 1988, abandoned. This application Aug. 13, 1990, Ser. No. 566,257

Int. Cl.[5] A61F *2/06, 2/04*

U.S. Cl. 623—1 **13 Claims**



1. The method of growing a homograft in a vessel having a lumen of sufficient size to accommodate a foreign body and carrying blood flow in a living body which comprises the steps of:

a. making an incision in a vessel;

b. inserting a tubular substrate into the vessel;

c. said substrate having an inside surface and an outside surface, said substrate having a first open end and a second open end to permit blood flow along said inside surface at least one of said surfaces being thrombogenic to promote growth of collagenous tissue on said thrombogenic surface;

d. said tubular substrate having an outside diameter at said outside surface no greater than the diameter of the lumen of said vessel;

e. positioning said tubular substrate in said vessel to permit blood flow through said substrate from said first end to said second end and along said inside surface;

f. anchoring said first end to prevent said substrate from moving with the flow of blood in said vessel, said anchor leaving said second end free to move within said vessel;

g. leaving said substrate suspended in the blood flow of said vessel for a sufficient time for collagenous tissue generated by said body to form on the thrombogenic surface and form a homograft;

h. removing said substrate from said vessel;

i. removing said homograft from said substrate; and,

j. inverting said homograft to position the surface of the collagenous homograft with the surface exposed to blood flow in said vessel to form an inside surface for the homograft and thereby provide a homograft having a surface compatible with blood flow.

5,192,312

TREATED TISSUE FOR IMPLANTATION AND METHODS OF TREATMENT AND USE

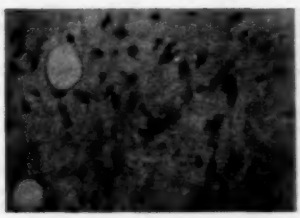
E. Christopher Orton, Fort Collins, Colo., assignor to Colorado State University Research Foundation, Fort Collins, Colo.

Filed Mar. 5, 1991, Ser. No. 664,902

Int. Cl.[5] A61F *2/24, 2/02, 2/54;* A01N *1/02*

U.S. Cl. 623—2 **24 Claims**

1. An implantable human heart valve treated with growth factor effective on fibroblast cells and populated with fibroblast cells in an amount and for a time period effective for



rendering the heart valve substantially non-immunogenic upon implant into a mammal.

5,192,313

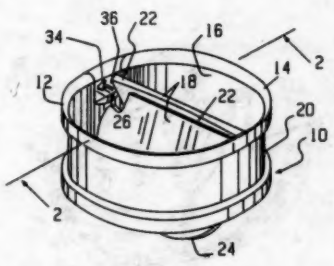
HEART VALVE PROSTHESIS WITH IMPROVED BI-LEAFLET PIVOT DESIGN

John C. Budd, and Louis A. Campbell, both of Austin, Tex., assignors to Carbomedics, Inc., Austin, Tex.

Continuation-in-part of Ser. No. 427,246, Oct. 25, 1989, Pat. No. 5,147,390. This application Jun. 11, 1992, Ser. No. 896,831

Int. Cl.[5] A61F *2/24*

U.S. Cl. 623—2 **15 Claims**



1. A heart valve prosthesis comprising:

a generally annular valve body configured around an axis and having an inner surface defining a central passageway through which blood flows;

a pair of leaflet occluders proportioned to be pivotally received within said valve body and to move between an open position permitting blood to flow in a downstream direction and a closed position blocking flow of blood in an upstream direction, said leaflet occluders each having a diametral edge;

a generally arcuate edge opposite the diametral edge; and

a pair of opposed outwardly protruding mounting ears on the generally arcuate edge adjacent the diametral edge for pivotally mounting the leaflet occluder to the valve body, the mounting ears having a proximal end adjacent the diametral edge; and a distal end spaced away from the diametral edge;

said valve body defining four recesses, a pair for each leaflet occluder, each recess comprising a generally triangular-

shaped opening in the valve body inner surface, each said recess further comprising

a first arcuate end portion adjacent an upstream side of said annular valve body and configured to periodically receive the proximal end of the respective mounting ear in generally rolling contact and

second and third arcuate end portions downstream from said first arcuate end portion with a downstream side wall extending between said first end portion and said second end portion and a convex upstream side wall extending between said first end portion and said third end portion, said second arcuate end portion being adjacent to a center line lying parallel to the axis of the valve body and between the two occluders and said third arcuate end portion being spaced away from said center line, the second end portion being downstream from the third end portion, and said downstream side wall being angled away from the center line from the first arcuate end portion to the second arcuate end portion; and

a third side wall extending between said second end portion and said third end portion and configured to periodically receive the distal end of the respective mounting ear in generally sliding contact.

5,192,314

SYNTHETIC INTRAVENTRICULAR IMPLANTS AND METHOD OF INSERTING

Michael K. Daskalakis, 623 James Pl., Anaheim, Calif. 92801

Filed Dec. 12, 1991, Ser. No. 806,696
Int. Cl.[5] A61F *1/10, 2/02*
U.S. Cl. 623—3 17 Claims

1. A synthetic intraventricular implant device capable of being surgically secured within a ventricle of a human heart, said ventricle having a wall with exterior and interior surfaces and an interior cavity with a distal end, comprising:

a generally oblong, shaped and contoured body having an inner wall adapted to face said interior cavity of said ventricle and an outer wall adapted to be snugly secured against said interior surface of said ventricle;

said inner and outer walls of said contoured body being sealingly fixed together; and

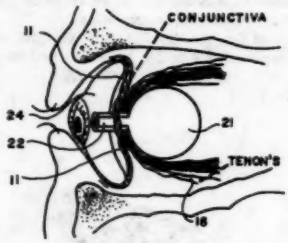
a cuff formed from a portion of one of said inner and outer walls of said contoured body so as to completely surround said inner and outer walls of said contoured body for securing said implant in position within said wall of said ventricle, with said cuff capable of being fixed to said interior surface of said ventricle wall, within said interior cavity.

5,192,315

TOTAL OCULAR REPLACEMENT APPARATUS WITH MUSCLE ATTACHMENT SITES

Jean T. Jacob-LaBarre, 135 Arlington Dr., Metairie, La. 70001

Filed Mar. 24, 1992, Ser. No. 856,465
Int. Cl.[5] A61F *2/14*
U.S. Cl. 623—4 45 Claims



1. A total ocular replacement comprising:

a) an implant body that includes an outer surface, and comprising a spherically shaped portion with a forwardly positioned cell ingrowth surface at least on the spherical portion that is receptive of ocular conjunctiva tissue;

b) a conformer having a rear concave surface that is shaped to conform generally to the spherical implant body and to conjunctival tissue attaching to the cell ingrowth surface of the implant body;

c) wherein the conformer rear concave surface has a peripheral portion that extends over the ingrowth surface and the surface is shaped to interface with the combination of the implant body and attached conjunctival tissue without substantial damage to the said attached conjunctival tissue;

d) the implant having a porous muscle ingrowth material that covers a portion of the implant body outer surface and including a plurality of muscle attachment sites for attaching a plurality of ocular muscles to the spherical implant body at spaced locations; and

e) said outer surface having regions devoid of ingrowth material to discourage muscle attachment.

5,192,316

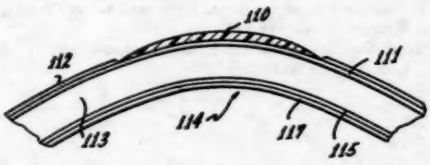
OCULAR DEVICE

Albert C. Ting, Laguna Niguel, Calif., assignor to Allergan, Inc., Irvine, Calif.

Continuation of Ser. No. 443,102, Nov. 28, 1989, abandoned, which is a continuation of Ser. No. 156,033, Feb. 16, 1988, abandoned. This application Jun. 12, 1992, Ser. No. 898,241
Int. Cl.[5] A61F *2/14*
U.S. Cl. 623—5 20 Claims

7. An ocular device comprising a lens means structured to be surgically implanted into or onto a living cornea to change the optical properties of the eye associated with said living cornea and at least one added component covalently bonded to and

substantially uniformly located throughout said lens means and acting to promote at least one of the growth of epithelial cells



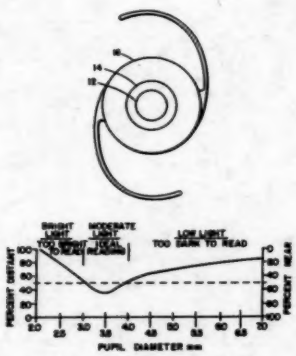
of said living cornea onto said lens means and the adhesion of said living cornea to said lens means.

5,192,317

MULTI FOCAL INTRA-OCULAR LENS

Irvin M. Kalb, Santa Monica, Calif., assignor to Irvin Kalb, Beverly Hills, Calif.

Division of Ser. No. 366,638, Jun. 14, 1989, Pat. No. 5,139,519, which is a continuation-in-part of Ser. No. 224,540, Jul. 26, 1988, abandoned. This application Apr. 8, 1992, Ser. No. 866,668
Int. Cl.[5] A61F 2/16
U.S. Cl. 623—6 6 Claims



4. An intra-ocular lens for eye implantation comprising:

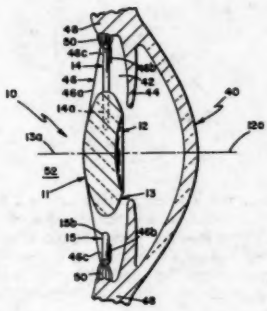
a lens body having optical portions comprised of a unitary material and additionally comprising at least a center zone and inner and outer concentrically located ring correction zones, said center zone having a distance power correction, said inner ring correction zone having a near power correction and said outer ring correction zone having a distance power correction, said center and outer ring correction zones sized to assure that under bright light and low light conditions, more than 75% of light focused on the eye's retina passes through distance power correction zones, and under moderate light conditions wherein reading is accomplished, more than 50% of light focused on the eye's retina passes through said inner ring correction zone.

5,192,318

ONE-PIECE BIFOCAL INTRAOCULAR LENS CONSTRUCTION

Richard T. Schneider, 17 Alachua Highlands, Alachua, Fla. 32615, and Richard H. Keates, 456 W. 10th Ave., Columbus, Ohio 43210

Continuation of Ser. No. 561,256, Jul. 30, 1990, abandoned, which is a continuation of Ser. No. 297,966, Nov. 17, 1989, abandoned, which is a continuation-in-part of Ser. No. 182,253, Apr. 15, 1988, abandoned, which is a continuation-in-part of Ser. No. 15,878, Feb. 18, 1987, abandoned, which is a continuation-in-part of Ser. No. 871,077, Jun. 5, 1986, abandoned. This application Aug. 11, 1992, Ser. No. 928,141
Int. Cl.[5] A61F 2/16
U.S. Cl. 623—6 3 Claims



1. A rigid intraocular lens implant adapted for use as an artificial lens implant in a posterior chamber of an eye; said intraocular lens comprising:

(a) means for non-movably retaining said lens implant within a posterior chamber of a user's eye; and,

(b) a lens body comprising a material having a first index of refraction and substantially no index of refraction gradient therein; said lens body having a first circular lens portion and a second annular lens portion, said second annular lens portion surrounding said first circular lens portion;

(i) said first lens portion comprising a portion of said lens body having said first index of refraction and a first radius of curvature defining a first optical power;

(ii) said second lens portion comprising a portion of said lens body having said first index of refraction and a second radius of curvature defining a second optical power;

(iii) said second lens portion being constructed and arranged for viewing relatively distant objects and having an optical power of between about +15 and about +25 diopters;

(iv) said first lens portion being constructed and arranged for viewing relatively near objects and having: a power of at least +3.0 diopters greater than said second lens portion; and, a diameter of no greater than about 2.0 mm.

5,192,319

INTRAOCULAR REFRACTIVE LENS

Jan G. F. Worst, Julianalaan 11, Haren, Netherlands

Filed May 20, 1991, Ser. No. 703,271
Int. Cl.[5] A61F 2/16
U.S. Cl. 623—6 10 Claims

1. An iris tissue support fixation intraocular lens comprising:

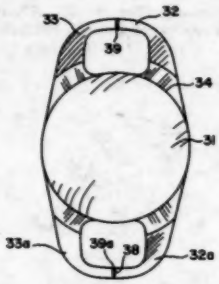
a) an optical portion having a periphery and adapted to be positioned in the anterior chamber of a phakic eye;

b) a support portion extending radially from the optical portion, and comprising flexible, normally abutting pincer arm means for pinching a portion of the anterior surface

only of iris tissue without penetrating to the posterior surface;

c) said pincer arm means comprising a plurality of pincer arms that define generally a plane, and including at least first and second pairs of pincer arms that are spaced circumferentially about the optical portion;

d) a gap positioned between the two pincer arms that form each of the pairs, said gaps communicating with the periphery of the optical portion;



e) said optical portion being a lens having a flat or convex curve on its front and a concave curve on its back, said concave curve forming, when the pincer arms pinch the anterior surface of the iris tissue, a space between said optical portion and the pupil of the eye, said space being defined generally by said optical portion and said plane; and

f) a plurality of lateral side gates formed in the optical portion and positioned between the optical portion and the gap between respective pairs of pincer arms, and each gate communicating with the space.

5,192,320

ARTIFICIAL LUNG AND METHOD OF USING IT

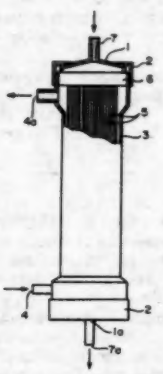
Takanori Anazawa; Kazutaka Murata, both of Sakura; Hiroyuki Akasu, and Rishichi Mimura, both of Kurashiki, all of Japan, assignors to Dainippon Ink and Chemicals Inc., Tokyo and Kuraray Co., Ltd., Okayama, both of Japan

Continuation of Ser. No. 216,547, Jul. 8, 1988, abandoned. This application Feb. 23, 1990, Ser. No. 488,452

Claims priority, application Japan, Jul. 11, 1987, 62-172067

Int. Cl.[5] A61F *2/04*

U.S. Cl. 623—12 **8 Claims**



1. A hollow fiber artificial lung adapted to perform exchange of gases between blood and a gas through a hollow fiber membrane by passing blood over one side of the membrane and oxygen or an oxygen-containing gas over the other side, said hollow fiber membrane consisting essentially of a polyolefin, said hollow fiber membrane having:

an inside diameter of 10 to 500 micrometers;

a thickness of 5 to 100 micrometers;

a porosity of 7 to 50%,

an oxygen flux, $Q(O_2)$, of at least 1×10^{-6},

a barrier layer having an average thickness of not more than 2 micrometers as calculated from oxygen flux $Q(O_2)$ and nitrogen flux $Q(N_2)$, and

an ethanol flux across the hollow fiber membrane of not more than 30 ml/(min.m^2).

5,192,321

APPARATUS AND METHOD FOR KNEE SURGERY

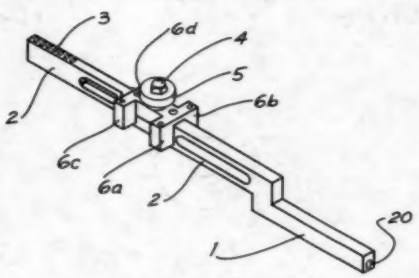
Andrew Strokon, 49 Renwick St., Leichhardt, New South Wales 2040, Australia

Filed Mar. 27, 1990, Ser. No. 499,884

Claims priority, application Australia, Mar. 29, 1989, PJ3415

Int. Cl.[5] A61F *2/00*

U.S. Cl. 623—13 **4 Claims**



1. A method of cruciate ligament replacement comprising harvesting a graft comprising first and second plugs of boney structure interconnected by superficial fibers of a patellar tendon, the method comprising:

surgically exposing the patella and its associated tendons;

advancing a dowel cutter along boney structure of the tibia so as to harvest the first plug of boney structure comprising a contiguous bone block containing the superficial fibers of the patellar tendon along its surface; and

repeating the procedure to harvest the second plug of boney structure comprising boney structure from the patella;

installing the graft by drilling a canal through the femur and inserting a stem of a fixing pin guide into the canal;

driving a fixing pin through the femur to come into abutment with the stem inserted in the drilled canal in the femur and removing the fixing pin guide by withdrawing the stem from the canal;

inserting one of the plugs of boney structure into the canal and advancing the previously inserted fixing pin across the inserted plug of boney structure to secure it; and

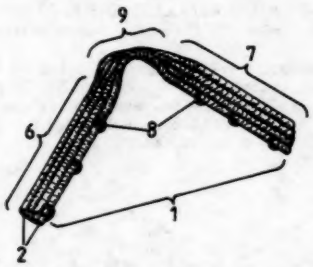
repeating the procedure to insert the other boney plug in the tibia and to secure it with a further fixing pin.

5,192,322

IMPLANT FOR A PROSTHETIC LIGAMENT AND/OR TENDON REPLACEMENT

Rudolf Koch, Berlingen; Stefan Freudiger, Bremgarten, and Hans Fluckiger, Oetwil, all of Switzerland, assignors to Sulzer Brothers Limited, Winterthur and Protek AG, Berne, both of Switzerland

Filed Dec. 3, 1990, Ser. No. 621,299
Claims priority, application Switzerland, Jan. 8, 1990, 46/90
Int. Cl.[5] A61F 2/08
U.S. Cl. 623—13 9 Claims



1. An implant for a prosthetic replacement of one of a ligament and tendon comprising

a plurality of discrete longitudinal strands disposed in side-by-side parallel relation, said strands defining a pair of axially spaced apart sub-zones, each sub-zone being folded over about a longitudinal axis, and a central zone between said sub-zones, wherein each longitudinal strand is free to move relative to each other longitudinal strand within said central zone; and

transverse filaments disposed about at least some of said strands of each sub-zone to reinforce said strands.

5,192,323

METHOD OF SURFACE HARDENING ORTHOPEDIC IMPLANT DEVICES

H. Ravindranath Shetty; Walter H. Ottersberg, both of Warsaw; Jack E. Parr, North Webster, and Roy D. Crowninshield, Warsaw, all of Ind., assignors to Zimmer, Inc., Warsaw, Ind. and Bristol-Myers Squibb Co., New York, N.Y.

Division of Ser. No. 609,269, Nov. 5, 1990. This application Jun. 27, 1991, Ser. No. 722,117
Int. Cl.[5] A61F 2/28
U.S. Cl. 623—16 2 Claims

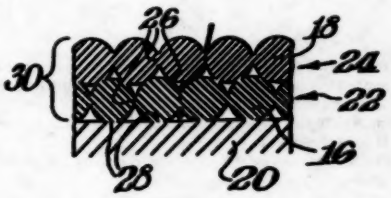
1. An orthopedic implant having enhanced surface hardness and wear resistance properties, said implant comprising a titanium substrate, an outer titanium nitride hardened surface layer substantially free of surface roughness, and a hardened diffusion layer underneath said outer surface layer comprising a solid solution of nitrogen, oxygen and carbon, said outer layer being thinner than said diffusion layer, said implant being prepared by hardening the surface of the titanium substrate by exposing said titanium substrate to an atmosphere of substantially non-rarified, non-activated molecular nitrogen gas at a process temperature within the range of 750° F. to 1300° F. for a process time duration sufficient to achieve the hardened diffusion layer and the hardened outer surface layer, said process resulting in enhanced wear resistance properties by substantially avoiding increased surface roughness.

5,192,324

BONE PROSTHESIS WITH POROUS COATING

Robert V. Kenna, New York, N.Y., assignor to Howmedica Inc., New York, N.Y.

Continuation of Ser. No. 356,976, May 25, 1989, abandoned, which is a continuation of Ser. No. 786,978, Oct. 15, 1985, Pat. No. 4,834,756, which is a division of Ser. No. 350,130, Feb. 18, 1982, Pat. No. 4,550,448. This application Jan. 2, 1990, Ser. No. 635,394
Int. Cl.[5] A61F 2/28
U.S. Cl. 623—16 7 Claims



1. In a bone prosthesis comprising a substrate of a metallic material and a porous coating of said metallic material bonded to and extending over at least a portion of the surface of said substrate, with said porous coating consisting essentially of a multiplicity of spherical particles of said metallic material bonded together at their points of contact, and with said particles defining between themselves a plurality of connected interstitial pores extending through said porous coating to said surface of said substrate,

the improvement wherein said porous coating consists essentially of first and second layers of said particles, and no additional layers of said particles, with the particles in said first layer being bonded to said substrate and said first layer being bonded to said second layer, the particles in said first and second layers being distributed upon said substrate and said first layer, respectively, at substantially uniform surface densities and the particles in said first layer being of substantially uniform size, the particles in said second layer being of substantially uniform size and the particles in said first layer being of substantially the same size as the particles in said second layer, and the size of said particles and their distribution in each of said layers are such that a strong and fatigue-resistant fixation of said prosthesis to the living bone of a patient may be achieved by tissue ingrowth into said porous coating.

5,192,325

CERAMIC IMPLANT

Naoto Kijima, Yokohama, and Yasuo Oguri, Tokyo, both of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Division of Ser. No. 596,954, Oct. 15, 1990, which is a division of Ser. No. 307,640, Feb. 8, 1989, Pat. No. 4,983,182. This application Jun. 24, 1992, Ser. No. 903,327

Claims priority, application Japan, Feb. 8, 1988, 63-27027; Feb. 8, 1988, 63-27029; Feb. 8, 1988, 63-27031

Int. Cl.[5] A61F *2/28*

U.S. Cl. 623—16 7 Claims

1. A ceramic implant comprising a sintered body of zirconia and a coating layer of a porous sintered body of a mixture comprising α-tricalcium phosphate and zirconia, formed on the surface of the sintered body of zirconia.

5,192,326

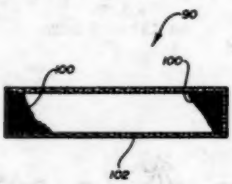
HYDROGEL BEAD INTERVERTEBRAL DISC NUCLEUS

Qi-Bin Bao, Livingston, and Paul A. Higham, Ringwood, both of N.J., assignors to Pfizer Hospital Products Group, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 633,711, Dec. 21, 1990, Pat. No. 5,047,055. This application Sep. 9, 1991, Ser. No. 756,957

Int. Cl.[5] A61F *2/44*

U.S. Cl. 623—17 26 Claims



1. A prosthetic nucleus for implanting in the disc space after the removal of the degenerated or damaged nucleus of an intervertebral disc comprising:

a multiplicity of hydrogel beads having a water content of at least 30%; and

a flexible semi-permeable cover surrounding said hydrogel beads.

5,192,327

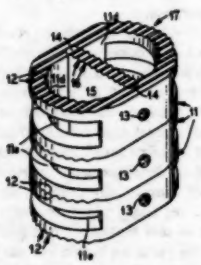
SURGICAL PROSTHETIC IMPLANT FOR VERTEBRAE

John W. Brantigan, 328 Overlook Brook Ct., Chagrin Falls, Ohio 44022

Filed Mar. 22, 1991, Ser. No. 673,474

Int. Cl.[5] A61F *2/44*

U.S. Cl. 623—17 14 Claims



1. A prosthetic device to integrate with and support vertebrae in a vertebral column which comprises a plurality of inert generally oval shaped rings conforming in shape and size with hard end plates of vertebrae on which it is to be seated, each of said rings having ridged top and bottom faces adapted to selectively interdigitate with surfaces of adjacent rings to form a stack and having peaks to bite into the end plates of adjoining vertebrae together with valleys between the peaks to receive bone ingrowth from the vertebrae for fusing the vertebrae together through the rings.

5,192,328

KNEE JOINT REPLACEMENT APPARATUS

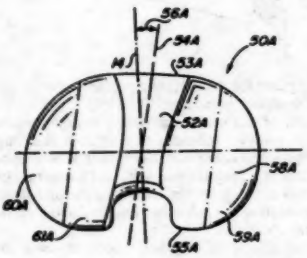
Thomas F. Winters, 2031 Venetian Way, Winter Park, Fla. 32789

Division of Ser. No. 414,804, Sep. 29, 1989, Pat. No. 5,059,216. This application Oct. 18, 1991, Ser. No. 778,704

The portion of the term of this patent subsequent to Oct. 22, 2008, has been disclaimed.

Int. Cl.[5] A61F *2/38*

U.S. Cl. 623—20 5 Claims



1. Apparatus for replacing a removed portion of the upper end of a human tibia, the apparatus comprising:

a bearing member, the bearing member having a central longitudinal prominence emulating the natural eminence of the tibia and outward, low friction bearing surfaces on either side of the central prominence for engaging opposing bearing surfaces of the femur and thereby function as the upper end of the tibia; and wherein the bearing member is structured such that, upon implantation,

the direction of the central prominence is rotated at an angle on the order of between 3°–15° with respect to the longitudinal direction across the cut of the tibia at the level of the removed portion.

5,192,329

OBLONG ACETABULAR CUP

Michael J. Christie, Nashville, Tenn.; Alfred F. DeCarlo, Jr., Stamford, Conn.; Timothy McTighe, Chagrin Falls, Ohio, and Douglas G. Noiles, New Canaan, Conn., assignors to Joint Medical Products Corporation, Stamford, Conn.

Filed Mar. 7, 1991, Ser. No. 665,952

Int. Cl.[5] A61F *2/31*

U.S. Cl. 623—22 19 Claims

1. An acetabular cup for implantation in a patient's pelvis comprising a body having:

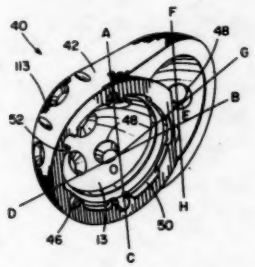
(a) a first outer surface for engagement with bone,

(b) a second outer surface having an overall oblong configuration which defines a longitudinal plane and a longitudinal axis, and

(c) a cavity formed in the body for receiving a bearing element,

said cavity having an opening formed in a portion of said

second outer surface which defines a first plane, said first plane forming an acute angle with said longitudinal plane in a direction along the longitudinal axis such that when the acetabular cup is implanted in the patient's pelvis said first plane is more adducted than the longitudinal plane.



5,192,330

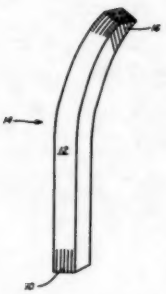
ORTHOPEDIC DEVICE OF BIOCOMPATIBLE POLYMER WITH ORIENTED FIBER REINFORCEMENT

Fu-Kuo Chang, Palo Alto, Calif.; Kenneth Reifsnider, Blacksburg, Va.; James A. Davidson, Germantown, Tenn., and Frederick S. Georgette, Troy, Mich., assignors to Smith & Nephew Richards, Inc., Memphis, Tenn.

Division of Ser. No. 5,091, Jan. 20, 1987. This application Aug. 6, 1991, Ser. No. 740,723

Int. Cl.[5] A61F *2/32*

U.S. Cl. 623—22 **66 Claims**



1. An orthopaedic device, for human implantation having improved axial bending and torque bearing properties, said device comprising:

a curved elongated body having an outer surface and a longitudinal axis, the body comprising a matrix of biocompatible polymeric material defining the shape of the body; and

reinforcing plies embedded within said matrix, said plies being curved in approximate correspondence with the curvature of the device and said plies being formed from fibers, said fibers being continuous and generally parallel to each other within each ply;

wherein a majority of the plies are oriented at a non-zero angle to the longitudinal axis of the curved elongated body.

5,192,331

SHANK FOR A FEMUR HEAD PROSTHESIS

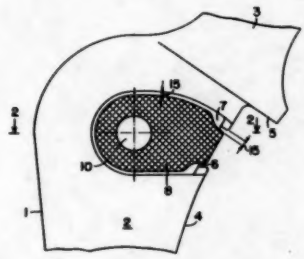
Lorenzo Spotorno, Finale Ligure, Italy, and Otto Frey, Winterthur, Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Oct. 30, 1991, Ser. No. 784,895

Claims priority, application Switzerland, Nov. 16, 1990, 03645/90

Int. Cl.[5] A61F *2/36*

U.S. Cl. 623—23 **27 Claims**



17. A shank for a femur head prosthesis comprising

a single piece body for implanting in a femur;

a neck extending from one end of said body;

a collar disposed between said body and said neck, said collar having a base for bearing on cortical tissue of a femur;

a cavity in said shank, said cavity extending from a medial side of said shank towards a lateral side of said shank with an opening in said medial side;

an elastic filler in said cavity for damping movements of said neck relative to said shank body; and

a sheet covering disposed over said filler to maintain said filler in said cavity during compression of said filler in response to bending of said neck relative to said body.

5,192,332

COSMETIC TEMPORARY COLORING COMPOSITIONS CONTAINING PROTEIN DERIVATIVES

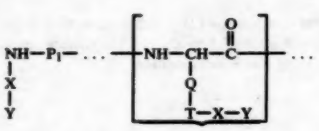
Gérard Lang, Saint-Gratien; Serge Forestier, Claye-Souilly; Gérard Malle, Villiers-Sur-Morin, and Alex Junino, Aulnay-Sous-Bois, all of France, assignors to L'Oreal, Paris, France

Continuation-in-part of Ser. No. 447,532, Dec. 7, 1989, abandoned. This application Oct. 7, 1991, Ser. No. 771,478
Claims priority, application Luxembourg, Oct. 14, 1983, 85 047

Int. Cl.[5] A61K *7/13*

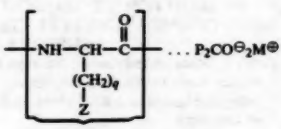
U.S. Cl. 8—405 8 Claims

1. A process for the temporary coloring of human hair, nails or the skin comprising applying thereto in an amount effective to color said human hair, nails or skin a composition comprising a solution in water, a lower mono-alcohol or polyol or an aqueous alcoholic mixture wherein the alcohol is present in an amount ranging from 0.5 to 50 percent by weight of protein derivative having a molecular weight of from 500 to 50,000 and having the formula:



(I)

A

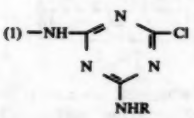


B

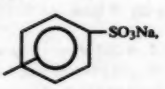
wherein

Y is a residue of a molecule of dye of formula YX' selected from the group consisting of CI 13245, CI 14824, CI 16202, CI 17865, CI 17756, CI 17757, CI 17910, CI 18096, CI 18097, CI 18105, CI 18156, CI 18157, CI 18159, CI 18852, CI 18972, CI 18990, CI 19036, CI 61200, CI 61210, CI 61211, CI 74460 and CI 74459,

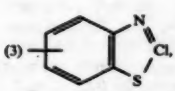
wherein X' is



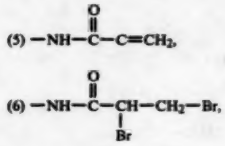
wherein R is



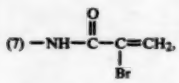
(2) $-SO_2-CH_2-CH_2-OSO_3Na$,



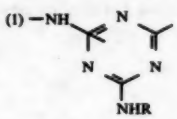
(4) $-SO_2-NH-CH_2-CH_2-OSO_3Na$,



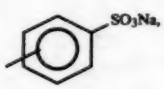
or



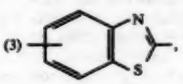
X is:



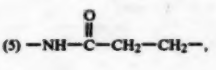
wherein R is:



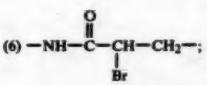
(2) $-SO_2-CH_2-CH_2-$,



(4) $-SO_2-NH-CH_2-CH_2-$



or



P_1 and P_2 are non-acylated chains of said protein which are not modified chemically by addition or nucleophilic substitution, said protein being selected from the group consisting of:

(1) a protein of animal origin selected from the group consisting of keratin, gelatin, egg albumin, blood serum albumin, casein and lactalbumin,

(2) a protein of vegetable origin selected from the group consisting of soya, groundnut and cotton seed, and

(3) a hydrolyzate of the protein defined in (1) and (2),

M is hydrogen, alkali metal, magnesium or $N^+(R_2)_4$, wherein each R_2 is, independently, hydrogen, alkyl having 1–4 carbon atoms or hydroxyalkyl having 1–4 carbon atoms,

Q is an alkyl, aryl or aralkyl group of side chain of amino acid of unit A of said protein derivative,

T is O, NH or S,

Z is:

(1) $SO_3^-M^+$, wherein M has the meaning given above,

(2) SR_3, wherein
R_3 is

$$-(CH_2)_p-CH(R_4)-CO_2^-M^+,$$

$$-(CH_2)_p-CH(R_4)-SO_3^-M^+,$$

or

$$-(CH_2)_p-CH(R_4)-CO-R_5,$$

M has the meaning given above,
p is 0 or an integer from 1–5,
R_4 is hydrogen or alkyl having 1–4 carbon atoms and
R_5 is

$$-N(R_6)-D-{}^+N(R_6)(R_6)-E^-$$

or

$$-N(R_6)-D-SO_3^{\ominus}M^{\oplus},$$

wherein D is linear or branched alkylene having 2–10 carbon atoms,
M has the meaning given above and each R_6 is, independently, hydrogen, alkyl having 1–4 carbon atoms, hydroxyalkyl having 1–4 carbon atoms and
E^- is a halide, $RCOO^-$, RSO_3^- or RSO_4^-, wherein R is a hydrocarbon group having 1–10 carbon atoms, or

(3) an amino-terminal group from amino acid of unit B of said protein derivative, which amino acid is basic and is unsubstituted or mono- or disubstituted on the amino group with an R_3 group, wherein
R_3 is

$$-(CH_2)_p-CH(R_4)-CO^-{}_2M^+,$$

$$-(CH_2)_p-CH(R_4)-SO^-{}_3M^+,$$

or

$$-(CH_2)_p-CH(R_4)-CO-R_5$$

wherein p, R_4, M and R_5 have the meanings given above, with the proviso that Z is only $SO_3^-M^+$ or SR_3 when the amino acid of the unit B contains cysteine,
q is an integer from 1 to 5 with the proviso that when Z is $SO_3^-M^+$ or SR_3, q is 1 and the amino acid of the unit B contains cysteine,
the units A make up 1 to 70 percent by weight of said protein derivative,
the units B make up 0 to 15 percent by weight of said protein derivative, and
said protein derivative is present in an amount ranging from 0.005 to 10 percent by weight based on the total weight of said composition.

5,192,333

AQUEOUS PROGRESSIVE HAIR COLORANT HAVING SOLUBLE SULFUR SOURCE AND AMPHOTERIC SURFACTANT

Herbert Lapidus, Ridgefield, Conn., assignor to Combe Incorporated, White Plains, N.Y.

Continuation of Ser. No. 576,787, Sep. 4, 1990, abandoned. This application Feb. 12, 1992, Ser. No. 834,387
Int. Cl.[5] A61K *7/13*
U.S. Cl. 8—405 **28 Claims**

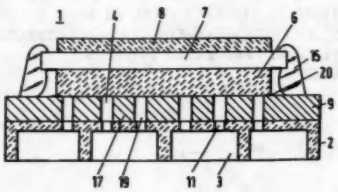
1. A clear, aqueous, shelf-stable composition for dyeing human hair, comprising:
a soluble salt of a metal selected from the group consisting of lead and bismuth;
a soluble source of sulfur, said salt of a metal and said source of sulfur being in respective amounts sufficient to cause the gradual deposit by said unit of a metal, in the presence of said source of sulfur, of insoluble metallic dye on the cuticle and within the shaft of human hair;
an amphoteric surfactant in an amount sufficient to form a complex both with said salt of a metal and with said source of sulfur; and
a pH controller that controls the pH of the composition to be within the range of about 7.5 to about 11.0, thereby producing a clear, shelf-stable composition.

5,192,334

METHOD FOR MECHANICALLY CONNECTING HIGH-TEMPERATURE FUEL CELLS TO A FUEL CELL SUPPORT

Franz J. Rohr, Abtsteinach; Andreas Belzner, Heidelberg, and Heinz Stadelmann, Schrobenhausen, all of Fed. Rep. of Germany, assignors to ABB Patent GmbH, Mannheim, Fed. Rep. of Germany

Filed May 4, 1992, Ser. No. 877,860
Claims priority, application Fed. Rep. of Germany, May 4, 1991, 4114644
Int. Cl.[5] H01M *8/00*
U.S. Cl. 29—623.5 **12 Claims**



1. A method for producing a gas-tight mechanical connection between at least one prefabricated fuel cell having a fixed electrolyte disk with opposed main surfaces and anode and cathode electrodes applied to the opposed main surfaces, and a ceramic fuel cell support on which the at least one fuel cell is disposed, which comprises:
a) applying a nickel layer to the fuel cell support by screen printing, for mechanically connecting the fuel cell to the support, for tapping current from the cathode electrode and as a current connection for an electrical connection to further fuel cells;
b) laying the fuel cell on the freshly printed nickel layer on the fuel cell support to form a fuel cell system; and
c) sintering the fuel cell system with the imposition of a slight mechanical pressure upon the fuel cell, by initially performing the sintering for approximately one hour in air at a temperature of approximately 400° C. and subsequently in a nitrogen atmosphere at a temperature of approximately 1150° C.

5,192,335

FUEL ADDITIVE COMPOSITIONS CONTAINING POLY(OXYALKYLENE) AMINES AND POLYALKYL HYDROXYAROMATICS

Richard E. Cherpeck, Cotati, Calif., assignor to Chevron Research and Technology Company, San Francisco, Calif.

Filed Mar. 20, 1992, Ser. No. 854,172
Int. Cl.[5] C10L 1/22
U.S. Cl. 44—387 23 Claims

1. A fuel additive composition comprising:

(a) a poly(oxyalkylene) amine having at least one basic nitrogen atom and a sufficient number of oxyalkylene units to render the poly(oxyalkylene) amine soluble in hydrocarbons boiling in the gasoline or diesel range; and

(b) a polyalkyl hydroxyaromatic compound or salt thereof wherein the polyalkyl group has sufficient molecular weight and carbon chain length to render the polyalkyl hydroxyaromatic compound soluble in hydrocarbons boiling in the gasoline or diesel range.

5,192,336

ANTI-FOAM DIESEL FUEL

Rupinder S. Grewal, Sugar Land, Tex., assignor to Nalco Chemical Company, Naperville, Ill.

Filed Dec. 4, 1991, Ser. No. 802,157
Int. Cl.[5] C10L 5/00
U.S. Cl. 44—418 2 Claims

1. A hydrocarbon fuel composition, wherein said hydrocarbon fuel is a diesel fuel including from 1–50 ppm of a bis amide selected from the group consisting of an ethylene bis stearamide, an ethylene bis oleamide, an ethylene bis lauramide, an ethylene bis palmitamide, and an ethylene bis myristamide.

5,192,337

AGENT FOR THE SUPPRESSION OF COAL DUST

Mark T. Wajer, Baltimore, Md.; David M. Smith, Kearneysville, W. Va., and Vernon D. Miles, Columbia, Md., assignors to Martin Marietta Magnesia Specialties Inc., Bethesda, Md.

Filed Jul. 10, 1991, Ser. No. 727,776
Int. Cl.[5] C10L 10/00
U.S. Cl. 44—602 15 Claims

1. A dust control agent comprising from about 20 to about 99 weight percent blending oil selected from the group consisting of reclaimed motor oil, oil obtained from petroleum crude, animal oil, vegetable oil, mineral oil, and combinations thereof, and from about 1 to about 80 weight percent petroleum resin obtained from the deresination of cylinder stock.

5,192,338

COAL ASH MODIFICATION AND REDUCTION

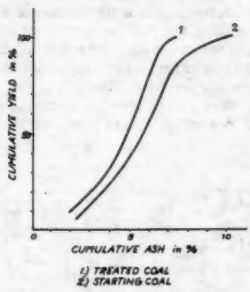
Allan B. Waugh, Sutherland, and Keith M. Bowling, Turramurra, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organisation, Australia

Continuation of Ser. No. 478,005, May 1, 1990, abandoned. This application Apr. 6, 1992, Ser. No. 863,535
Claims priority, application Australia, Sep. 3, 1987, PI4128
Int. Cl.[5] C10L 9/02
U.S. Cl. 44—627 11 Claims

1. A process for the benefication of a solid carbonaceous material which contains at least one mineral consisting essentially of:

(a) forming an aqueous solution of an effective amount of a compound selected form the group consisting of citric acid, acetic acid, ascorbic acid, oxalic acid, formic acid, succinic acid, adipic acid, ethylenediaminetetraacetic acid, a disodium salt of ethylenediaminetetraacetic acid, 8-hydroxyquinoline, mercaptoethanol, sorbitol, mannitol, threitol, sucrose, maltose, dextrose, lactose, starch, glycogen, cellulose, a cellulose derivative and galactose, which compound will react with the at least one mineral and with the provision that in the case of citric acid, the effective amount of the citric acid in this aqueous solution is 3 molar;

(b) contacting said carbonaceous material with said at least one solution at a temperature less than the boiling point of said solution for a sufficient time to allow the compound to react with the at least one mineral to selectively remove or chemically modify at least one mineral contained in



said carbonaceous material, said modification resulting in facilitated removal of said mineral by washing in step (c) or resulting in altering ashforming properties of said carbonaceous material to yield improved ash characteristics; and

(c) subsequently washing the carbonaceous material with water.

5,192,339

ABRASIVE GRAIN AND METHOD FOR MANUFACTURING THE SAME

Mitsuru Hasegawa; Tadashi Hiraiwa, and Tetsuo Hatanaka, all of Shiojiri, Japan, assignors to Showa Denko K.K., Tokyo, Japan

Continuation of Ser. No. 474,041, Apr. 25, 1990. This application Mar. 6, 1992, Ser. No. 845,828
Claims priority, application Japan, Aug. 25, 1988, 63-211087
Int. Cl.[5] B24D 3/00
U.S. Cl. 51—309 7 Claims

1. An abrasive grain comprising alpha-Al_2O_3 crystal particles substantially smaller than 0.5 microns, solidly dissolved with 0.005 to 2.23 mol % of at least one of Ti, Mn, V, Ga, Zn, and Rh added in the form of particles having a size of less than 2 microns, wherein the a-axis length of the hexagonal unit cell of the alpha-Al_2O_3 is 4.75892 to 4.76340 angstroms when measured by a powder x-ray diffraction and having a density greater than 90% of the theoretical value.

5,192,340

HOLLOW FIBER FILTER CLEANING SYSTEM AND MORE PARTICULARLY TO THE CONTROL OF EMISSIONS FROM SOLVENT CLEANING EQUIPMENT

David C. H. Grant, Selbyville, Del.; Randolph H. Watkins, Wonder Lake, Ill.; Robert M. Sluga, Gurnee, Ill.; Steven J. Wurgler, Cary, Ill.; Gregory D. Mills, Mountain Home, Ark.; Dennis C. Berry, Woodstock, and Jerry D. Fisher, McHenry, both of Ill., assignors to Baxter International, Inc.

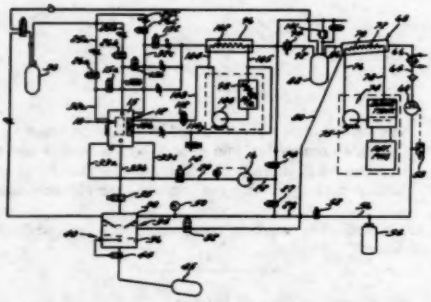
Continuation-in-part of Ser. No. 581,020, Sep. 12, 1990, Pat. No. 5,106,404. This application Feb. 21, 1992, Ser. No. 839,965
Int. Cl.[5] B01D 19/00
U.S. Cl. 55—23 18 Claims

1. A method for controlling atmospheric emission of volatile fluids used in cleaning a hollow fiber dialyzer by contact with a fluid composition comprised of volatile constituents, comprising the steps of:

(a) positioning the dialyzer in a chamber capable of maintaining pressure or vacuum and a selected temperature;

(b) evacuating said chamber to reduce ambient air contamination, discharging chamber contents to atmosphere;
(c) first flushing said chamber with a fluid composition comprised of volatile constituents;
(d) recovering said fluid composition following said first flushing step;
(e) flushing said chamber with a drying fluid derived form the recovered fluid; and
(f) subsequently, evacuating said chamber in one or more iterations, discharging chamber contents within the system and breaking the final vacuum from atmosphere.

7. An emission control system for a fluid composition comprised of volatile constituents used to clean a hollow fiber filter or capillary flow dialyzer comprising:
(a) a housing having a chamber for receiving the dialyzer to be cleaned by contact with or exposure to a volatile fluid;



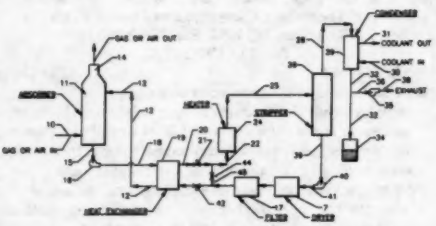
(b) control means for establishing a desired environment in said chamber, in the dialyzer and in the fibers including means for establishing a desired pressure within said chamber, dialyzer and fibers and means for introducing the fluid composition into said chamber, dialyzer, and fibers;
(c) separator means operatively associated with said chamber for separating gas and liquid components of said fluid composition;
(d) stripping means communicating with said separator means for fractionating the lower boiling point volatile constituents form said gas component, to return the higher boiling point volatiles form said gas component to the fluid phase and yield a stripped or solvent humidified gas; and
(e) means for delivering said stripped gas to said chamber, dialyzer and fibers for service as a drying agent.

5,192,341
SELECTED SOLVENT COMPOSITION AND PROCESS EMPLOYING SAME

Arthur J. Ehrler, Brooklyn, Ohio, assignor to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 623,486, Dec. 4, 1990, abandoned, which is a continuation of Ser. No. 539,502, Jun. 18, 1990, abandoned, which is a continuation of Ser. No. 432,242, Nov. 6, 1989, abandoned, which is a continuation of Ser. No. 123,227, Nov. 20, 1987, abandoned, which is a continuation of Ser. No. 24,850, Mar. 13, 1987, Pat. No. 4,708,721, which is a continuation of Ser. No. 677,233, Dec. 3, 1984, abandoned. This application Oct. 25, 1991, Ser. No. 782,936
Int. Cl.[5] B01D *47/00*
U.S. Cl. 55—68 **5 Claims**

1. A method of removing a pollutant or other material from a gaseous stream containing the same which comprises contacting said gaseous stream with a liquid selective solvent composition consisting essentially of at least two of the selective solvents selected from the group consisting of diethyl phthalate, dioctyl phthalate, dioctyl adipate, acetyltributyl citrate and diisohexyl phthalte, said composition having a viscosity of less than about 30 centipoises at a temperature of

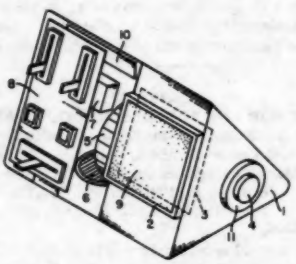


about 77° F. and removing the resulting treated gaseous stream now having a reduced amount of said pollutant therein.

5,192,342
APPARATUS FOR ENHANCING THE ENVIRONMENTAL QUALITY OF WORK SPACES

Robert A. Baron, 27 Sunnyside Rd., Scotia, N.Y. 12302, and Frederick Haber, Box 138, Old Chatham, N.Y. 12136

Filed Apr. 15, 1992, Ser. No. 868,650
Int. Cl.[5] B01D *46/00*
U.S. Cl. 55—97 **13 Claims**



12. A method for enhancing the environment quality of a workspace comprising in combination:
(a) lowering the level of particulate matter in a body of air within said workspace below 10^4 particles per liter;
(b) introducing a fragrance into said air in said workspace; and
(c) introducing broad band noise into said workspace, said broad band noise comprising sound waves in the range from 80 Hz to 10 KHz in frequency and 10 to 70 dB in strength and having no outstanding pure tones.

5,192,343
HIGH EFFICIENCY PARTICULATE AIR FILTER VENTILATION SYSTEM

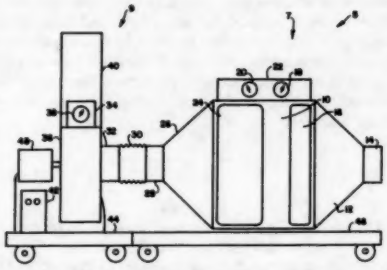
Harold G. Henry, 41 Ponderosa La., Palmyra, Va. 22963

Filed Nov. 1, 1991, Ser. No. 786,762
Int. Cl.[5] B01D *46/04*
U.S. Cl. 55—213 **10 Claims**

1. An apparatus for ventilating an area, said apparatus comprising:
a housing having an inlet and an outlet;
a fan for moving air through the housing;
first monitoring means for monitoring a first static pressure across said fan;
first filter means mounted in said housing for prefiltering the air moving through the housing;
second monitoring means for monitoring a second static pressure across said first filter means;

second filter means mounted in said housing for filtering the air filtered by said first filter means;

third monitoring means for monitoring a third static pressure across said second filter means; and



means for varying a volume of air flowing through said housing and said fan;

wherein said varying means comprises a damper mounted in an outlet passage from said fan.

5,192,344

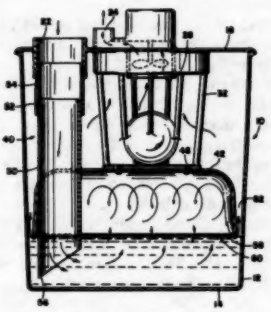
WET FILTER VACUUM CLEANER

Ronald J. House, Bixby, Okla., assignor to Andre E. Thorn Bacon and Sydney J. Thorn Bacon, both of Bixby, Okla., a part interest

Filed Sep. 10, 1991, Ser. No. 757,661

Int. Cl.[5] B01D *47/00*

U.S. Cl. 55—216 **15 Claims**



1. In combination with a vacuum cleaner having a substantially cylindrical tank with a bottom, a cover pneumatically closing the tank to define a vacuum chamber, an eccentric inlet through the cover at a radius from the vertical axis of the tank, an outlet through the cover and water therein, apparatus comprising:

a convex baffle having a rim of diameter less than the diameter of the tank, an eccentric aperture disposed therethrough at said radius from an axis of said baffle and a lower edge disposed slightly above the water;

a tube extending snugly through said aperture and having a lower opening at an angle other than 90 degrees in relation to a longitudinal axis thereof facing substantially toward said axis of said baffle and entirely disposed slightly beneath the water; and

means disposed on an upper end of said tube for connecting said tube to the inlet with said baffle substantially concentrically mounted in the tank with said aperture vertically aligned with the inlet.

5,192,345

SYSTEM AND PROCESS FOR THE PURIFICATION TREATMENT OF SMOKES, DUSTS AND EXHAUST GASES AFTER COMBUSTION

Luca Pala, via Capo delle armi, 54, 00122 Ostia Lido, Rome, Italy

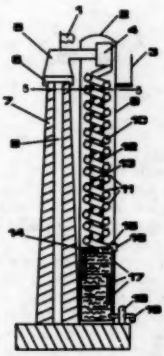
PCT No. PCT/IT90/00034, § 371 Date Jul. 30, 1991, § 102(e) Date Jul. 30, 1991, PCT Pub. No. WO91/09663, PCT Pub. Date Jul. 11, 1991

PCT Filed Mar. 29, 1990, Ser. No. 730,917

Claims priority, application Italy, Dec. 22, 1989, 48690 A/89

Int. Cl.[5] B01D *47/12*

U.S. Cl. 55—223 **10 Claims**



1. A system for purifying pollutants contained in post combustion gases travelling out of an exhaust conduit, comprising:

a cap, said cap being positioned so as to direct the post combustion gases into said system;

a suction fan for drawing the post combustion gases through said cap and further into said system;

a serpentine treatment tube having an upstream end and a downstream end, the upstream end of said serpentine treatment tube being in communication with the post combustion gases exiting said cap;

nozzles spaced along said treatment tube between the first and second ends of said treatment tube;

means for introducing water and air to said treatment tube such that water is nebulized by said nozzles and pollutants are separated from the post combustion gases and combined with the water so as to form sewage and such that sewage flow from the upstream end of said treatment tube to the downstream end is facilitated; and

means for storing the sewage and separating the water and the pollutants contained in the sewage, said means for storing and separating being in fluid communication with the downstream end of said treatment tube out through which the purified exhaust gases exit, and wherein the exhaust conduit is an automobile exhaust conduit and said cap includes an inlet tube that is dimensioned and arranged so as to direct automobile exhaust into said system, and wherein said means for storing and separating includes a recycling water conduit and a first water storage tank, said recycling water conduit extending from the downstream end of said treatment tube and opening into said first water storage tank, and

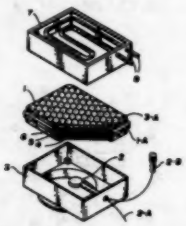
said system further comprising a sewage line, a filter and an additional water storage tank in fluid communication with said first water storage tank through said filter, said water storage tanks each including a sloped bottom and a discharge tube extending from the sloped bottom and in communication with said sewage line positioned below said water storage tanks.

5,192,346

AIR PURIFIER PLEATED FILTER TO STOP POLLUTION FOR PASSENGER INSIDE OF THE MOTOR VEHICLE

Thaddeus Kowalczyk, 8163 Lochdale, Dearborn Heights, Mich. 48127

Filed Jul. 22, 1992, Ser. No. 917,855
Int. Cl.[5] B01D *53/04*
U.S. Cl. 55—269 5 Claims



1. An air purification filter for passenger compartment of a motor vehicle, said filter comprising

a housing having an inlet and an outlet disposed opposite each other to define an essentially straight direction of fluid flow therebetween,

a first flat pleated layer of filtering material with a sufficient amount of activated carbon to remove at least partly pollutants from air passing through the filter,

a second flat pleated layer of a particulate filtering material in stacked relationship with said first flat pleated layer,

a heater located upstream of said filtering layers for raising the temperature of air entering said filtering layers,

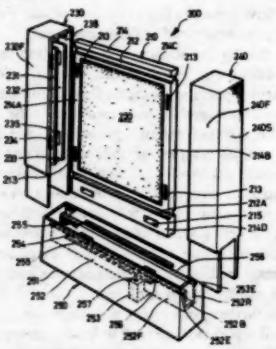
wherein said first pleated flat layer and said second pleated flat layer are disposed essentially perpendicularly to the direction of fluid flow between the inlet and the outlet.

5,192,347

FILTER ASSEMBLY

Joung C. Lee, Samgye, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suweon, Rep. of Korea

Filed Dec. 10, 1991, Ser. No. 804,596
Claims priority, application Rep. of Korea, Dec. 10, 1990, 90-19435
Int. Cl.[5] B01D *29/05, 29/44*
U.S. Cl. 55—359 22 Claims



1. An air filter assembly adapted to be removably mounted in an air treating unit, comprising:

housing means having sides defining a space for receiving a filter panel, and

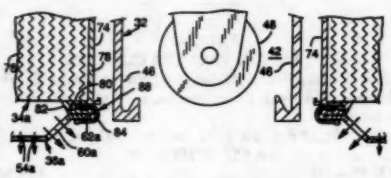
cover means mounted in said housing means for displacement between a retracted position wherein said cover means is disposed in a contracted condition within said housing and an extended position wherein said cover means is disposed in an expanded condition within said housing, said cover means being disposed adjacent one of said sides when in said contracted position to enable said filter to remove dust from an air flow, and being displaceable from said contracted position to said expanded position wherein it extends across at least one face of the filter panel to resist the escape of dust from the filter panel to the surrounding environment during handling of said air filter assembly.

5,192,348

DIRECTIONAL AIR DIFFUSER PANEL FOR CLEAN ROOM VENTILATION SYSTEM

Craig S. Ludwig, Portland, Oreg., assignor to Brod & McClung-Pace Co., Portland, Oreg.

Filed Aug. 21, 1991, Ser. No. 748,229
Int. Cl.[5] B01D *46/00*
U.S. Cl. 55—385.2 15 Claims



1. A clean room air diffusion system for controlling an airflow, the system comprising:

a support grid having grid elements defining a panel space for transmitting the airflow, and defining a dead space below the grid elements; and

a diffuser panel attached to the grid in registration with the panel space having a central region and a peripheral region, the central region defining a plurality of perforations, the aggregate area of the perforations being a first fraction of the total area of the central region, the peripheral region defining a plurality of openings, the aggregate area of the openings being a second fraction of the total area of the peripheral region, the second fraction being greater than the first fraction, in that the peripheral region is more perforated per unit area than the central region, thereby to fill in the dead space below the grid.

5,192,349

FILTER ELEMENT FOR SEPARATING DUSTS FROM GASES

Ekkehard Weber, Essen, Fed. Rep. of Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 7, 1990, Ser. No. 519,887
Claims priority, application Fed. Rep. of Germany, May 10, 1989, 3915187
Int. Cl.[5] B01D *46/00*
U.S. Cl. 55—522 5 Claims

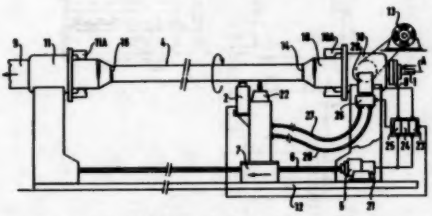
1. A filter element for separating dust from a gas which element comprises a thin walled structure having a wall thickness of 0.05 to 2 mm and a front surface having a plurality of substantially regularly arranged holes of a non-circular cross-section with a hydraulic diameter of 0.01 to 1 mm wherein the area of the holes is 3 to 25% of the front surface of the filter element, said element being of a metal, alloy or plastic.

5,192,350

METHOD OF FLAME FINISHING OPTICAL FIBER PREFORMS

Christian Le Sergent, Marcoussis, France, assignor to Alcatel Fibres Optiques, Bezons Cedex, France

Filed Feb. 1, 1991, Ser. No. 648,939
Claims priority, application France, Feb. 2, 1990, 90 01237
Int. Cl.[5] C03B *37/025*
U.S. Cl. 65—3.11 5 Claims



1. A method of correcting the exterior surface of an optical fiber, solid cylindrical preform constituted by a cylindrical piece of glass made of silica and having an axis (A), comprising the following steps:

installing said piece of silica glass on a glassmaker's lathe, with said axis (A) extending lengthwise and with the exterior surface thereof substantially circularly cylindrical about said axis (A), said lathe including rotation means for rotating said piece of silica glass about said axis, a carriage for carrying an oxygen-hydrogen torch facing said glass piece exterior surface to flame heat an elementary area of said exterior surface, and displacement means for displacing said carriage longitudinally; and

effecting multiple heating passes of said carriage and imparting a speed of rotation to said piece of glass and displacing said torch at a longitudinal speed along the length of said piece of glass, and heating said piece by applying a flame of said oxygen-hydrogen torch to the exterior surface of said cylindrical piece of silica glass while controlling the speed of rotation of said piece of glass, the longitudinal speed of said carriage and the heating power of said torch;

the improvement further comprising the step of performing an opto-geometrical measurement pass after said installation operation by means of a measurement assembly which includes at least one measurement sensor providing a set of measurement signals in which the signals from said assembly are associated with respective elementary areas in a set of such areas covering said exterior surface of said piece of glass, and are representative of optical and/or geometrical defects presented by said piece of glass in said elementary surface areas as outside projection portions of said silica glass, and wherein said method includes, for at least one of said multiple heating passes, effecting a correction heating pass subsequent to the provision of said measurement signals during said opto-geometrical measurement pass and evaporating said outside projection portions of said silica glass by applying said oxygen-hydrogen torch flame to the surface of said glass piece;

at least one of said heating parameters constituting a correction parameter, and said method further comprises controlling said correction parameter at each instant during said correction heating pass as a function of said measurement signals associated with said one elementary area being heated at said instant by said torch to correct said optical and/or geometrical defect presented by said piece of silica glass in said one area by flame vaporization removal of the excess glass from the surface of said glass piece.

5,192,351

PRODUCTION OF DEHYDROXYLATED GLASS

Akshay Mathur, and Lenwood D. Pye, both of Alfred, N.Y., assignors to Alfred University, Alfred, N.Y.

Filed Dec. 17, 1991, Ser. No. 812,130
Int. Cl.[5] C03B *37/016*
U.S. Cl. 65—18.1 24 Claims

1. A process of preparing a substantially dehydroxylated glass comprising:

impregnating a dry porous silica gel with a quanidine compound, urea, or a mixture thereof in an organic solvent which the quanidine compound, urea, or mixture thereof is soluble in and

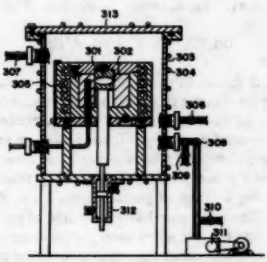
sintering the impregnated gel in a non-oxidizing atmosphere to form a substantially dehydroxylated silica glass.

5,192,352

MOLDING METHOD USING GLASS BLANK

Tetsuo Kuwabara, Urawa, and Shuji Murakami, Sagamihara, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 17, 1991, Ser. No. 731,319
Claims priority, application Japan, Jul. 24, 1990, 2-194031
Int. Cl.[5] C03C *25/02*; C03B *11/08*
U.S. Cl. 65—60.53 4 Claims



1. A molding method for molding a glass lens comprising the steps of:

preparing a core glass having a predetermined shape;

covering an evaporation glass upon aid core glass, said evaporation glass containing, in weight %, SiO_2:70 to 90, Na_2O: no more than 3, Al_2O_2: no more than 3, B_2O_3: the remaining %, wherein a thickness of a surface cover layer of said evaporation glass is in the range of 50 A to 500 A; and

molding said core glass covered by said evaporation glass, wherein said core glass is heated up to a molding temperature and the heated core glass is pressed, thereby being molded to a lens shape.

5,192,353

METHOD FOR PRESS MOLDING NEAR NET-SHAPE GLASS ARTICLES

Jackson P. Trentelman, Painted Post, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed Apr. 9, 1991, Ser. No. 682,556
Int. Cl.[5] C03B *11/12*
U.S. Cl. 65—66 3 Claims

1. A method for press molding a near net-shape glass article utilizing a mold having receiving and opposing molding surfaces, which comprises the steps of:

a) preheating said receiving and opposing molding surfaces to different predetermined preheat temperature, said predetermined preheat temperature of said receiving surface being greater than said predetermined preheat temperature of said opposing molding surface;

b) maintaining, within a tolerance of 5° C., said predeter-

mined preheat temperature of said receiving molding surface;

c) maintaining, within a tolerance of 5° C., said predetermined preheat temperature of said opposing molding surface;

d) delivering to said receiving molding surface a charge of molten glass of a predetermined volume to form a glass article of desired shape and dimensions;

e) bringing said receiving and opposing molding surfaces of said mold into close proximity with each other;

f) pressing said charge for a press time sufficient to symmetrically transfer enough heat from said charge of molten glass such that the temperature of the molding surfaces and said glass charge are all nearly simultaneously made nearly equal and are below said glass charge's softening point thereby forming said glass article from said glass charge; and

g) removing said glass article from said receiving molding surface.

5,192,354

SOIL SUBSTITUTE

Christopher J. Drysdale, Berwick, and David G. Nichols, Devon Meadows, both of Australia, assignors to Debco Pty. Ltd., Australia

Filed Feb. 22, 1990, Ser. No. 482,950

Claims priority, application Australia, Feb. 24, 1989, PJ2929/89

Int. Cl.[5] C05F *9/04, 11/02*

U.S. Cl. 71—9 **6 Claims**

1. A method for making a soil substitute comprising intimately mixing by volume from 50 to 70% of shredded treebark particles, from 10 to 40% of quarry stone particles and from 5 to 25% of silica sand particles to form a mixture and thereafter composting the shredded treebark particles while in the mixture; the quarry stone particles comprising relatively coarse aggregate having a range of particle sizes up to about 9.5 mm and relatively fine aggregate having a range of particle sizes up to about 6.7 mm; and the silica sand particles comprising relatively coarse and fine sand aggregates, a major proportion of the coarse sand particles falling within a size range of from 300 microns to 2.36 mm and a major proportion of the fine sand particles falling within a size range of from 75 microns to 1.18 mm.

5,192,355

MANUFACTURING AND USING NITROGEN FERTILIZER SOLUTIONS ON A FARM

John A. Eastin, Lincoln, Nebr., assignor to Kamterter Products, Inc., Lincoln, Nebr.

Division of Ser. No. 691,742, Jan. 15, 1985, abandoned, which is a continuation-in-part of Ser. No. 507,166, Jun. 23, 1983, Pat. No. 4,511,389, which is a division of Ser. No. 379,466, May 19, 1982, Pat. No. 4,435,201, which is a continuation-in-part of Ser. No. 100,825, Dec. 6, 1979, abandoned, which is a continuation of Ser. No. 824,289, Aug. 15, 1977, abandoned, which is a continuation of Ser. No. 728,788, Oct. 19, 1976, abandoned, which is a division of Ser. No. 581,050, May 27, 1975, abandoned. This application Jan. 27, 1987, Ser. No. 7,115

Int. Cl.[5] C05C *3/00, 5/00*

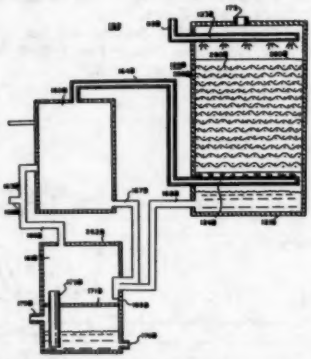
U.S. Cl. 71—54 **20 Claims**

1. A method of nitrogeneous fertilizing comprising the steps of:

oxidizing nitrogen in a continuous process by burning ammonia to obtain nitrogen oxides;

bringing the nitrogen oxides into contact with a surface catalyst and with flowing water at a predetermined rate in a continuous process as the nitrogen oxides are being formed to form a dilute solution of nitric acid as the nitrogen oxides are formed,

said step of bringing the nitrogen oxides into contact with a surface catalyst including the step of bringing the nitrogen oxides into contact with a series of layers of surface catalyst vertically arranged with respect to each other; and



using the dilute solution of nitric acid in a process leading to and including the application of nitrogenous fertilizer on a farm.

5,192,356

METHOD AND COMPOSITION FOR TREATING SPLIT-SHELL CROPS

Charles H. Keller, 9005 Vista Rd., Chowchilla, Calif. 93610

Continuation-in-part of Ser. No. 158,567, Feb. 22, 1988, Pat. No. 5,043,005. This application Aug. 21, 1991, Ser. No. 748,266

Int. Cl.[5] A01N *59/06, 37/02*

U.S. Cl. 504—187 **2 Claims**

1. A method for treating crop plants which are a member of the genus Gossypium to increase the percentage of split-shell crops produced which comprises:

exposing selected Gossypium, prior to crop harvest, to an aluminum treatment for times and under conditions sufficient to increase the proportion of split-shelled to non-split crops, relative to plants not so treated.

5,192,357

ACRYLATE FUNGICIDES

Geoffrey R. Cliff, Whittlesford, and Ian C. Richards, Keddington, both of England, assignors to Schering Agrochemicals Limited, England

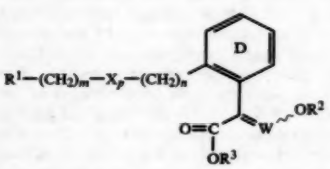
Filed Jul. 8, 1988, Ser. No. 216,831

Claims priority, application United Kingdom, Jul. 11, 1987, 8716392; Mar. 29, 1988, 8807388

Int. Cl.[5] A01N *31/00*; A61K *31/235*; C07C *321/06*

U.S. Cl. 504—315 **15 Claims**

1. A compound of formula I



(I)

wherein either

A) W is CH, in which case p is 1 and

(i) n is 1, m is 0 and R^1 is R^5, where R^5 is optionally substituted alkenyl, optionally substituted alkynyl or optionally substituted N-substituted iminomethylene, or

(ii) n is 0, m is 1 to 18, and R^1 is optionally substituted aryl; or

B) W is N, in which case m is 0, p and n are 1, and R^1 is R^5; and acid addition salts of any compounds which are basic and basic addition salts of any compounds which are acidic.

5,192,358

OXALIC ACID DERIVATIVES, THEIR PREPARATION AND PLANT GROWTH REGULATORS CONTAINING THEM

Costin Rentzea, Heidelberg, and Wilhelm Rademacher, Limburgerhof, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jul. 1, 1991, Ser. No. 723,872

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1990, 4022265

Int. Cl.[5] A01N *37/44*; C07C *229/00, 69/74*

U.S. Cl. 504—307 **5 Claims**

1. Oxalylhydroxamic acid derivatives of the formula

$$R^1—ON(R^2)—CO—CO—X—R^3 \qquad I,$$

where the substituents have the following meanings:
X is oxygen or sulfur;
R^1 is
- C_3–C_{18}-alkenyl or C_3–C_8-alkynyl, where these groups may carry from one to five halogen atoms;
- monocyclic or polycyclic C_3–C_{10}-cycloalkyl or C_3–C_{10}-cycloalkylmethyl, where these rings may carry from one to three C_1–C_4-alkyl groups and/or one phenyl ring; or
- phenyl, where the aromatic radical may carry from one to five halogen atoms and/or from one to three of the following groups: nitro, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio and C_1–C_4-haloalkylthio;

R^2 is hydrogen, C_1–C_4-alkyl, C_3–C_4-alkenyl or benzyl, where the aromatic radical may carry from one to five halogen atoms and/or from one to three of the following groups: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio and C_1–C_4-haloalkylthio;
R^3 is
- C_1–C_{20}-alkyl which may carry from one to five halogen atoms and/or from one to three of the following groups: cyano, C_1–C_{10}-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkylthio, C_3–C_{10}-cycloalkyl, C_3–C_{10}-cycloalkoxy, C_3–C_{10}-cycloalkylthio and C_3–C_{12}-alkenyloxy;
- C_3–C_{18}-alkenyl or C_3–C_8-alkynyl, where these groups may carry from one to five halogen atoms;
- monocyclic or polycyclic C_3–C_{10}-cycloalkyl which may carry from one to three C_1–C_4-alkyl groups;
- phenyl-C_1–C_4-alkyl or phenoxy-C_1–C_4-alkyl, where the aromatic radicals may carry from one to five halogen atoms and/or from one to three of the following groups: nitro, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylthio and C_1–C_4-haloalkylthio;

and agriculturally useful salts thereof.

5,192,359

RECOVERY OF ALUMINUM FROM FURNACE DROSS

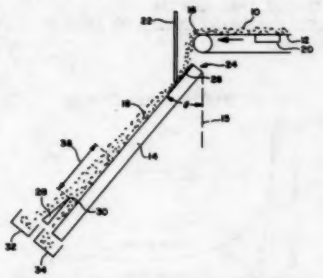
Gilbert F. Bourcier, Richmond; John F. Krzyston, Chesterfield; Philip E. Smith, and Larry C. Venable, both of Richmond, all of Va., assignors to Reynolds Metals Company, Richmond, Va.

Filed Jun. 11, 1992, Ser. No. 897,228

Int. Cl.[5] C22B *7/00*; B03C *1/02*

U.S. Cl. 75—10.67 **15 Claims**

1. A method of separating from aluminum furnace dross particles containing substantial amounts of metallic aluminum, said method comprising:
- a. providing aluminum furnace dross in particulate form, the particles having a nominal particle size of less than about one inch;
- b. generating a linear electromagnetic force field defined by linearly travelling electromagnetic waves, wherein the linear force field is provided by a linear induction motor that has a substantially planar surface inclined at an angle of from about 40° to about 60° relative to a vertical axis, the electromagnetic force field oriented to levitate conductive particles above the surface of the motor and to provide moving electromagnetic waves that travel substantially parallel to the planar surface from a lower portion of the motor toward an upper portion of the motor;
- c. dropping the dross particles onto an upper portion of the planar surface of the motor so that particles having a substantial content of metallic aluminum are levitated above the planar surface of the motor and are allowed to



fall in a generally downward direction along and substantially parallel to the planar surface of the motor;
- d. separating the dross particles into at least two groups of particles by providing a flow splitter extending across and spaced outwardly a predetermined distance from a lower portion of the planar surface of the motor, the groups of particles including a first group of particles that have been levitated above the planar surface by at least the predetermined distance by the electromagnetic field, and a second group of particles that have not been levitated above the planar surface by at least the predetermined distance; and
- e. separately collecting the first and second groups of dross particles.

5,192,360

WATER-SOLUBLE FLUX FOR CORED SOLDER

Raymond L. Turner, La Habra, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 607,200, Oct. 31, 1990, abandoned, which is a continuation-in-part of Ser. No. 523,765, May 15, 1990. This application May 31, 1991, Ser. No. 708,961

Int. Cl.[5] B23K *35/34*

U.S. Cl. 75—303 **12 Claims**

1. A composite cored solder comprising a hollow cylinder of solder, said hollow filled with flux, said flux comprising citric acid.

5,192,361

SUBMICRON LIGNIN-BASED BINDERS FOR WATER-BASED BLACK INK FORMULATIONS

Peter Schilling, Charleston, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Jan. 27, 1992, Ser. No. 827,705

Int. Cl.[5] C09D *11/14*; C08L *97/00*; C07G *1/00*

U.S. Cl. 106—26 R **8 Claims**

1. An improved submicron lignin binder resin composition comprising a colloidal lignin dispersion wherein the lignin is "A" lignin derived from the kraft pulping process and the dispersion is characterized by monodispersed lignin particles exhibiting a median lignin particle diameter size of less than about 300 angstroms, wherein the improvement comprises replacing 10 to 25% by weight of the submicron lignin resin

with acrylic resin, rosin resin, styrene-maleic anhydride copolymer resin, or a combination thereof.

5,192,362

DENTINE PROTECTION

Wilson Harvey, Dartford, and Michael Wilson, London, both of England, assignors to National Research Development Corporation, London, England

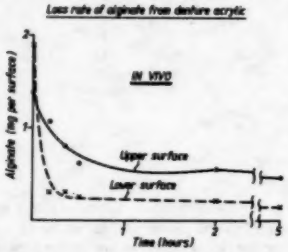
PCT No. PCT/GB89/00134, § 371 Date Jun. 29, 1990, § 102(e) Date Jun. 29, 1990, PCT Pub. No. WO89/07437, PCT Pub. Date Aug. 24, 1989

Continuation of Ser. No. 536,573, Jun. 29, 1990, abandoned. This PCT application Feb. 10, 1989, Ser. No. 735,752

Claims priority, application United Kingdom, Feb. 11, 1988, 8803157; Oct. 17, 1988, 8824256

Int. Cl.[5] C09K *3/00*; C08L *1/00*; A61C *13/02*, *5/00*

U.S. Cl. 106—35 9 Claims



1. A method for providing dentures with a protective coating, which method comprises applying to the dentures, from a aqueous dispersion, a non self-supporting, initially adhesive but subsequently ablative, coating of a non-toxic, negatively charged polysaccharide which, when subjected to an in vitro bacterial adhesion test, as hereinafter defined, reduces the adhesion of *Streptococcus salivarius* cells to denture acrylic by at least 25% compared with an uncoated control, and wherein after a 5-hour in vitro ablation test, as hereinafter defined, at least 2% of the coating remains, said bacterial adhesion test comprising spraying strips of denture-grade acrylic sheet (1.5×6.0×0.3 cm thick) with an aqueous dispersion of said polysaccharide and drying them at room temperature, standing the strips upright in a suspension of 10^7 colony-forming units of *Streptococcus salivarius* per ml of an artificial saliva obtainable by dissolving 1.492 grams of potassium chloride (KCl), 0.213 gram of calcium chloride ($CaCl_2$), 0.820 gram of sodium dihydrogen phosphate dihydrate ($NaH_2PO_4.2H_2O$) and 0.264 gram of disodium hydrogen phosphate dodecahydrate ($Na_2HPO_4.12H_2O$) in one liter of deionized water, shaking the strips for 18 hours at 37° C. so that the saliva continually washes the coated surface, removing the strips from the saliva, washing them three times in sterile water, placing them on a thin layer of mitis-salivarius agar, immersing them in said agar by pouring it over the strips, incubating the immersed strips at 37° C. for 24 hours, counting the number of colonies of bacteria attached and comparing them with a control test carried out in the same way except that the strips are not coated with the polysaccharide, and said in vitro ablation test being one in which strips of denture-grade acrylic sheet are sprayed with an aqueous dispersion of the polysaccharide and dried at room temperature, the strips are stood in an artificial saliva obtainable by dissolving 1.492 grams of potassium chloride (KCl), 0.213 gram of calcium chloride ($CaCl_2$), 0.820 gram of sodium dihydrogen phosphate dihydrate ($NaH_2PO_4.2H_2O$) and 0.264 gram of disodium hydrogen phosphate dodecahydrate ($Na_2HPO_4.12H_2O$) in one liter of deionized water and shaken at 37° C. for 5 hours so that the solution continually washes the coated surface, and the weight loss of the coated strips is determined by swabbing the coating material from them and assaying it for carbohydrate.

5,192,363

PAPER SIZING COMPOSITIONS

William R. Bussell, and Nicholas S. Morgan, both of Bristol, United Kingdom, assignors to EKA Nobel Landskrona AB, Landskrona, Sweden

Continuation of Ser. No. 499,562, Mar. 26, 1990, abandoned, which is a continuation of Ser. No. 194,381, May 16, 1988, abandoned. This application Aug. 30, 1991, Ser. No. 753,401

Claims priority, application United Kingdom, May 26, 1987, 8712370

Int. Cl.[5] C08C *89/00*

U.S. Cl. 106—218 22 Claims

1. A paper-sizing composition in the form of a preformed stable aqueous dispersion for subsequent use in a paper-sizing process, said composition having the ability to size paper stock, sheet or web to an effective extent, without the necessity to add any further materials, when brought into contact with said stock, sheet or web during said sizing process, the composition comprising:

(a) a rosin size,

(b) an amine salt of a rosin acid, said amine salt being the salt of rosin acid and a C_1–C_4 mono-, di- or tri-alkanolamine; and

(c) a polyaluminum chloride.

5,192,364

PRIMER COMPOSITIONS

Yoshifumi Inoue; Kin Saito, both of Annaka; Keisuke Imai, Tomioka, and Masatoshi Arai, Annaka, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jun. 25, 1991, Ser. No. 720,727

Claims priority, application Japan, Jun. 26, 1990, 2-168039

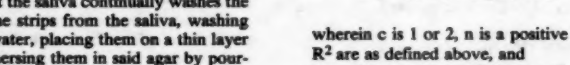
Int. Cl.[5] C09K *3/00*

U.S. Cl. 106—287.16 10 Claims

1. A primer composition comprising:

(A) at least one organosilicon compound selected from the group consisting of:

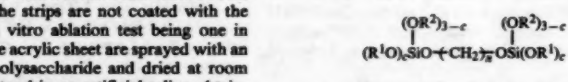
organosilicon compounds having the following general formula [II]:



[II]

wherein c is 1 or 2, n is a positive integer, and R^1 and R^2 are as defined above, and

organosilicon compounds having the following general formula [III]:



[III]

wherein R^1, R^2, c and n are as defined above, and

partially hydrolyzed products of these organosilicon compounds;

(B) at least one compound selected from the group consisting of an alkoxytitanium, a partially hydrolyzed product thereof and a cohydrolytic condensation product of the same;

(C) an acid and water; and

(D) an organic solvent.

5,192,365

BUFF RUTILE PIGMENT COMPOSITIONS

Zoltan M. Modly, Shaker Hts., Ohio, assignor to Engelhard Corporation, Iselin, N.J.

Filed Jun. 6, 1991, Ser. No. 711,446

The portion of the term of this patent subsequent to Apr. 9, 2008, has been disclaimed.

Int. Cl.[5] C09C *1/36*

U.S. Cl. 106—439 17 Claims

1. A buff rutile pigment composition comprising about 40 to about 55% by weight of titanium, from about 0.4 to about 5% by weight of cobalt, from about 7 to about 14% by weight of tungsten, from 0.01 to about 5% by weight of lithium and from about 0.1 to about 20% by weight of cerium.

5,192,366

CEMENT ADMIXTURE AND CEMENT COMPOSITION

Asaaki Nishioka; Etsuo Sakai, both of Machida; Tomohiro Kaneko, Ichihara, and Masaki Ogasawara, Machida, all of Japan, assignors to Denki Kagaku Koygo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 4, 1990, Ser. No. 621,878

Claims priority, application Japan, Dec. 5, 1989, 1-315746; Dec. 5, 1989, 1-315748

Int. Cl.[5] C04B *24/00*

U.S. Cl. 106—724 8 Claims

1. A cement additive admixture comprising a polymer latex and a soluble water reducing agent wherein the copolymer latex comprises a copolymer of monomers comprising ethylene, vinyl acetate and an acrylic ester, in a ratio of 98:2 to 10:90 by weight of copolymer latex solids to the soluble water reducing agent, said soluble water reducing agent being an additive to cement capable of reducing the required water/cement ratio for achieving a specified fluidity for the cement additive admixture, an emulsion stabilizer for stabilizing the copolymer latex, said emulsion stabilizer being a surfactant which is an anionic, cationic, or nonionic surfactant, and

inorganic ultrafine particles wherein the ratio of solid content of the copolymer latex to the ultrafine particles is 95:5 to 5:95 by weight, said ultrafine particles having an average particle size smaller than the particle size of the cement.

5,192,367

DRIVE MECHANISM FOR A PRINTED SHEET VARNISHING DEVICE OF A PRINTING MACHINE

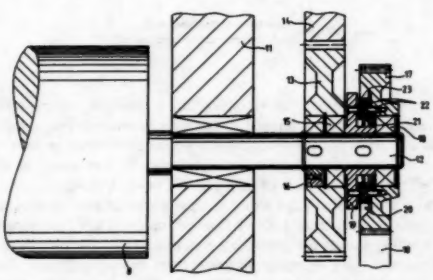
Günther Hofmann, Walldorf, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Apr. 29, 1991, Ser. No. 693,860

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1990, 4013462

Int. Cl.[5] B05C *1/02, 1/10*

U.S. Cl. 118—46 19 Claims



6. A varnishing device for a printing press comprising:

a varnish metering roller;

a varnish dipping roller;

motor means for rotating said varnish metering roller and said varnish dipping roller;

torque transmission means for connecting said motor means to said varnish metering roller and said varnish dipping roller;

said torque transmission means including a first torque transmission part for being connected to said motor means;

said torque transmission means further including a second torque transmission part for being connected to said varnish metering roller and said varnish dipping roller;

said first torque transmission part and said second torque transmission part each being configured and relatively positioned with respect to one another such that said motor means and said first torque transmission part provide rotational power to said second torque transmission part, said varnish metering roller, and said varnish dipping roller;

said first torque transmission part being out of contact with said second torque transmission part such that said first torque transmission part can rotate independently of said second torque transmission part;

mechanical clutch means for mechanically connecting a printing press drive to said varnish metering roller and said varnish dipping roller;

said mechanical clutch means and the printing press drive being for rotating said varnish metering roller and said varnish dipping roller;

said non-contacting torque transmission means for continuously transmitting torque between said first torque transmission part and said second torque transmission part; wherein said mechanical clutch means overruns said non-contacting torque transmission means when said press drive is engaged with said varnishing meter roller and said varnishing dipping roller.

5,192,368

SCREEN PRINTING MACHINE PROVIDED WITH A COMPRESSED AIR CLEANER

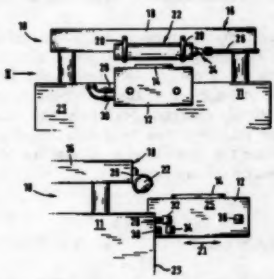
Ralf Harlizius, Neuss, Fed. Rep. of Germany, assignor to Rheinmetall GmbH, Ratingen, Fed. Rep. of Germany

Filed Jan. 30, 1992, Ser. No. 830,905

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1991, 4106330

Int. Cl.[5] B05C *11/00*

U.S. Cl. 118—72 7 Claims



1. A screen printing machine for the production of printed hybrid circuit boards, comprising a basic support housing; a printing table having an upper surface portion for a circuit board to be printed, said printing table mounted on said support housing for horizontal movement along a path between a first position, wherein a circuit board to be printed can be placed on said upper surface of said printing table, and a second printing position; a vertically raising frame member attached to said support housing and extending above said path of movement of said print table; compressed air cleaning

means, which are connected to a compressed air conduit containing a controllable valve and are mechanically fastened to an end surface of said frame member above said path of movement of said printing table, for directing compressed air onto said portion of said upper surface of said printing table during movement of said printing table along said path of movement; and, an electrical switching means, disposed on said printing table and on said basic support housing and responsive to the position of said printing table along said path of movement, for controlling the actuation and deactuation of said control valve to control the flow of said compressed air to said compressed air cleaning means.

5,192,369

APPARATUS FOR SPRAYING HARVESTED CROPS

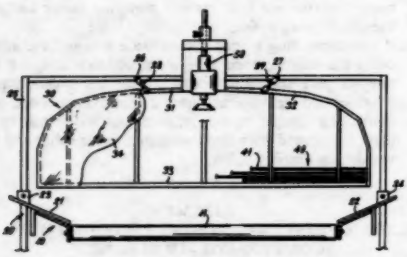
Barry J. Pye, Luton, England, assignor to British Technology Group Ltd., London, England

Continuation of Ser. No. 572,566, Aug. 27, 1990, abandoned, which is a division of Ser. No. 359,743, May 9, 1989, Pat. No. 4,971,818. This application Nov. 8, 1991, Ser. No. 789,773

Claims priority, application United Kingdom, Nov. 20, 1986, 8627795

Int. Cl.[5] B05D *1/04*

U.S. Cl. 118—624 **19 Claims**



1. A spray apparatus for the treatment of a harvested crop, comprising:

a high voltage electrostatic sprayhead,

a sprayhood surrounding the sprayhead and having an aperture opposite the sprayhead, and

insulating suspension means to suspend the sprayhood with the aperture adjacent a region of a conveyor to establish and maintain the sprayhood covering said region of said conveyor,

the sprayhood having an insulating cover and an insulated electrode extending around and above said aperture,

the electrode being energizable in operation to a potential similar to that applied to the sprayhead for applying an electrostatically charged spray from the sprayhead in a controlled manner throughout said region of the conveyor under the sprayhood to a quantity of crops conveyed past on the conveyor.

5,192,370

METHOD AND APPARATUS FOR FORMING THIN FILM

Masao Oda, and Tatsuya Iwasa, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 22, 1990, Ser. No. 542,148

Claims priority, application Japan, Sep. 5, 1989, 1-229951

Int. Cl.[5] H01L *21/00*

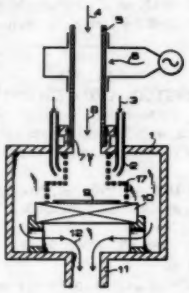
U.S. Cl. 118—723 **4 Claims**

1. A thin film forming apparatus wherein a substrate is enclosed, and a first reaction gas and an active species produced by separately exciting a second reaction gas are introduced into a reaction chamber provided to form a thin film on the surface of the substrate, said reaction chamber comprising:

a heater means for holding said substrate and heating it to a prescribed temperature;

a reaction gas supply port provided with an opening for directing the first reaction gas towards said substrate and supplying the reaction gas thereto;

an active species supply port provided with an opening for directing the active species of a separately excited second reaction gas toward said substrate and supplying the active species thereto separately from said first reaction gas; and



a metal porous plate having a number of small holes therein installed between said active species supply port and said heater means so as to enclose at least said substrate and said active species supply port;

said metal porous plate having one end between said active species supply port and said reaction gas supply port so as to enclose said active species supply port and having other end so as enclosing said substrate.

5,192,371

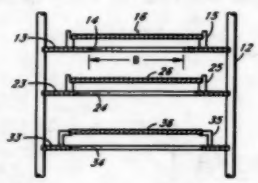
SUBSTRATE SUPPORTING APPARATUS FOR A CVD APPARATUS

Mitsutoshi Shuto; Yasushi Fukazawa, both of Tokyo, and Minoru Ohsaki, Kumamoto, all of Japan, assignors to ASM Japan K.K., Tokyo, Japan

Filed May 21, 1991, Ser. No. 703,809

Int. Cl.[5] C23C *16/46*

U.S. Cl. 118—728 **3 Claims**



1. A CVD apparatus for depositing a thin film on a plurality of substrates, characterized in that substrate supporting apparatus having a plurality of support plates positioned in parallel for supporting a plurality of substrates is positioned in the CVD apparatus, each of said plates having a central opening and a plurality of clips along the periphery of the opening for supporting a substrate above the opening, said CVD apparatus including means for providing reactive gas to the plurality of substrates, said openings in said plates having different sizes with respect to the other openings the sizes of which are determined by flow characteristics of said reactive gas in said CVD.

5,192,372

PROCESS FOR PRODUCING ISOTROPIC PERMANENT MAGNETS AND MATERIALS

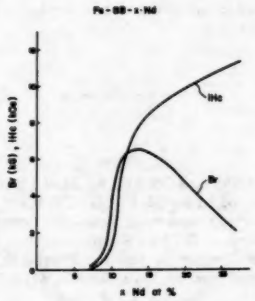
Setsuo Fujimura, Kyoto; Masato Sagawa, Nagaokakyo, and Yutaka Matsuura, Ibaraki, all of Japan, assignors to Sumitomo Special Metals Co., Ltd., Osaka, Japan

Division of Ser. No. 271,894, Nov. 16, 1988, abandoned, which is a division of Ser. No. 567,640, Dec. 30, 1983, Pat. No. 4,840,684. This application Jun. 18, 1991, Ser. No. 717,002

Claims priority, application Japan, May 6, 1983, 58-79096; May 6, 1983, 58-79098

Int. Cl.[5] H01F *1/02*

U.S. Cl. 148—101 18 Claims



1. A process for preparing an isotropic permanent magnet material comprising:

(a) melting and preparing alloys consisting essentially of, in atomic percent, 10–20% of R wherein R represents at least one element selected from the group consisting of Nd, Pr, La, Ce, Tb, Dy, Ho, Er, Eu, Sm, Gd, Pm, Tm, Yb, Lu and Y and wherein at least 50% of R consists of Nd and/or Pr, 5–18% of B and at least 62% Fe and inevitable impurities,

(b) cooling the resultant molten alloys,

(c) pulverizing the resulting alloys, and

(d) mixing a bonding agent with the resultant alloy powders.

5,192,373

MAGNESIUM OXIDE COATING FOR ELECTRICAL STEELS AND THE METHOD OF COATING

Wade S. Wright, Fairfield, and Robin A. Murphy, Franklin, both of Ohio, assignors to Armco, Inc., Middletown, Ohio

Division of Ser. No. 404,714, Sep. 8, 1989, abandoned. This application Apr. 12, 1991, Ser. No. 686,019

Int. Cl.[5] H01F *1/04*

U.S. Cl. 148—113 21 Claims

1. A method for producing a glass film on oriented silicon steel strip, said method comprising the steps of:

a) providing a magnesia bath consisting essentially of magnesia particles with a majority of said magnesia particles having a citric acid activity less than 200 seconds, up to 15 weight % TiO_2 based on the weight of said magnesia, up to 10 weight % SiO_2 based on the weight of said magnesia, up to 15 weight % Cr based on the weight of said magnesia, up to 0.3 weight % B based on the weight of said magnesia, up to 20 weight % phosphate based on the weight of said magnesia, and a metal chloride selected from the group consisting of magnesium chloride, calcium chloride, sodium chloride and/or potassium chloride:

b) maintaining said magnesia bath at temperature from above freezing to 25° C.;

c) applying an aqueous magnesia slurry from said bath to said strip;

d) drying said magnesia slurry to remove excess water and provide a dried magnesia coating weighing about 6.4 grams per square meter, said dried coating having 0.01 to 0.20 weight % total chlorine based on the weight of said dried magnesia with at least 0.01 weight % based on the weight of said dried magnesia being from said metal chloride; and

e) providing a final high temperature anneal to form said glass film wherein said metal chloride seals said coating surface during said anneal to control grain growth inhibitors in said steel to stabilize secondary grain growth and develop improved magnetic properties.

5,192,374

CHROMIUM-FREE METHOD AND COMPOSITION TO PROTECT ALUMINUM

Andrew Kindler, San Marino, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Sep. 27, 1991, Ser. No. 766,319

Int. Cl.[5] C23C *22/56*

U.S. Cl. 148—272 17 Claims

1. A method for providing the surface of aluminum or aluminum alloys with a protective coating consisting of:

(a) removing contaminants from said surface of said aluminum or aluminum alloys to provide a cleaned surface;

(b) exposing said cleaned surface to deionized water at a temperature within the range of 50° to 100° C. to form a porous boehmite coating on said surface;

(c) exposing said surface with said boehmite coating to an aqueous solution comprising a salt of cerium and a metal nitrate at a temperature within the range of 70° to 100° C. for a sufficient period of time to form oxides and hydroxides of said cerium within the pores of said porous boehmite coating to thereby provide said protective coating.

5,192,375

FE-BASED SOFT MAGNETIC ALLOY

Takao Sawa; Masami Okamura, both of Yokohama, and Yumiko Takahashi, Koshigaya, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

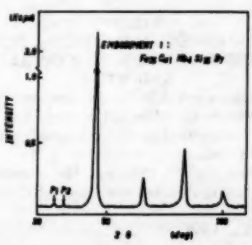
Continuation-in-part of Ser. No. 661,607, Feb. 28, 1991, abandoned, which is a division of Ser. No. 454,019, Dec. 20, 1989, Pat. No. 5,019,190. This application Mar. 26, 1991, Ser. No. 675,057

Claims priority, application Japan, Dec. 20, 1988, 63-319417

The portion of the term of this patent subsequent to May 28, 2008, has been disclaimed.

Int. Cl.[5] H01F *1/04*

U.S. Cl. 148—306 6 Claims



1. A toroidal choke coil comprising an Fe-based soft magnetic alloy essentially consisting of an Fe-based alloy, wherein said Fe-based alloy includes fine crystal grains having an average size of 300 Å or less and each of said fine crystal grains is composed of a body-centered cubic phase at least partially including a super lattice.

5,192,376

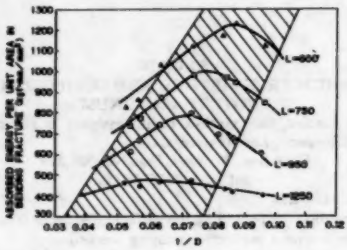
PROCESS FOR PRODUCING AUTOMOBILE BODY REINFORCING STEEL PIPE

Hiroto Tanabe, and Kazumasa Yamazaki, both of Tokai, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Division of Ser. No. 796,768, Nov. 25, 1991. This application May 21, 1992, Ser. No. 887,439

Int. Cl.[5] C21D *8/10*

U.S. Cl. 148—520 **8 Claims**



1. A process for producing an automobile body reinforcing steel pipe having a wall thickness-to-outer diameter ratio, t/D, defined by the following formula;

$$0.09-4.8\times10^{-5}\times L\leq t/D\leq 0.16-6.0\times10^{-5}\times L$$

where L(mm) is a span of a bending load applied to the pipe, said process comprising the steps of:

hot rolling to form a steel sheet from a steel consisting of;

C in an amount of from 0.15 to 0.25,

Mn in an amount sufficient to prevent a self-tempering during quench hardening of said steel, but not more than 1.8 wt %,

Si in an amount sufficient to obtain a sound weld-bonding of said pipe, but not more than 0.5 wt %,

Ti in an amount sufficient to fix N in steel, so that B effectively improves the steel hardenability, but not more than 0.04 wt %,

B in an amount from 0.0003 to 0.0035 wt %, and

the balance of Fe and unavoidable impurities, including N in a minimum amount of not more than 0.0080 wt %;

coiling said steel sheet in an as-hot rolled state at a temperature of 600° C. or higher;

roll-forming said steel sheet to a pipe shape having adjacent edges;

electric welding said pipe shape at said adjacent edges to form an electric welded steel pipe; and

quench hardening said steel pipe.

5,192,377

PROCESS OF PRODUCING CONTINUOUSLY CAST MONOTECTIC ALUMINUM-SILICON ALLOY STRIP AND WIRE

Bruno Prinz, Oberursel; Alberto Romero, and Ingrid Müller, both of Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

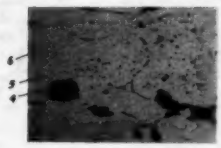
Filed Apr. 22, 1991, Ser. No. 689,413

Claims priority, application Fed. Rep. of Germany, May 5, 1990, 4014430

Int. Cl.[5] C22C *21/02, 21/04, 11/08, 12/00*

U.S. Cl. 148—551 **5 Claims**

1. A process of producing strip or wire, which strip or wire consists of a monotectic aluminum-silicon alloy comprising a matrix consisting of aluminum, an aluminum-silicon eutectic system, and 1 to 50% by weight lead or bismuth as a phase, said process comprising heating the matrix to above the segregation temperature to form molten matrix, continuously casting the strip or wire at a high casting velocity and a high cooling rate from the molten matrix, then subjecting the strip or wire to a



plastic deformation and then to a heat treatment at a temperature of 550° to 600° C.

5,192,378

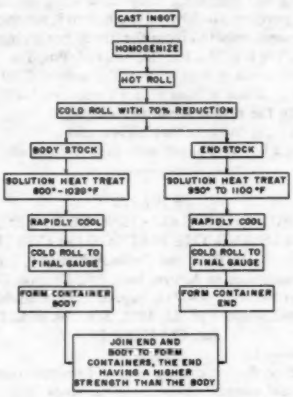
ALUMINUM ALLOY SHEET FOR FOOD AND BEVERAGE CONTAINERS

Roger D. Doherty, Wynnewood; John Liu, Lower Burrell, and Robert E. Sanders, Jr., New Kensington, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Nov. 13, 1990, Ser. No. 611,982

Int. Cl.[5] C22F *1/04*

U.S. Cl. 148—691 **42 Claims**


CAST INGOT
HOMOGENIZE
HOT ROLL
COLD ROLL WITH 70% REDUCTION
BODY STOCK
END STOCK
SOLUTION HEAT TREAT 800°-1020°F
SOLUTION HEAT TREAT 950° TO 1100°F
RAPIDLY COOL
RAPIDLY COOL
COLD ROLL TO FINAL GAUGE
COLD ROLL TO FINAL GAUGE
FORM CONTAINER BODY
FORM CONTAINER END
JOIN END AND BODY TO FORM CONTAINERS, THE END HAVING A HIGHER STRENGTH THAN THE BODY

1. A method of making an aluminum alloy sheet having a strength in the range of 55 to 60 ksi for forming into container panels for container ends comprising:

(a) providing a body of an aluminum alloy consisting essentially of 0.45 to 0.60 wt.% Cu, 1.1 to 1.7 wt.% Mg, 0.3 to 0.6 wt.% Si, 0.3 to 0.55 wt.% Fe, 0.5 to 1.2 wt.% Mn, the remainder aluminum, incidental elements and impurities;

(b) hot rolling said body to a gauge to provide a hot rolled product;

(c) cold rolling said hot rolled product to provide a reduction of 50 to 80% in thickness;

(d) solution heat treating said cold rolled product in a range of 800° to 1020° F.;

(e) rapidly cooling said solution heat treated product; and

(f) cold rolling said cooled product to final sheet gauge by providing a reduction of 50 to 90% in thickness.

5,192,379

DENSIFYING AND STABILIZING INGREDIENT

Craig E. Johnson, Indian Head, and Paul F. Dendor, Oxon Hill, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 6, 1974, Ser. No. 521,977
Int. Cl.[5] C06B 45/10
U.S. Cl. 149—19.4 13 Claims

1. In a propellant comprising a nitrocellulose-containing binder, and an oxidizer, the improvement comprising including as a component of the propellant at least one lead fluoride selected from a formula of the group consisting of PbF_2 and PbF_4.

4. In a propellant comprising a binder, and an oxidizer, the improvement comprising including as a component of the propellant at least one lead fluoride selected from a formula of the group consisting of PbF_2 and PbF_4, wherein the lead fluoride comprises 17% to 26% by weight of the propellant.

5,192,380

PNEUMATIC RADIAL TIRE FOR PASSENGER VEHICLE INCLUDING A PARTICULAR CARCASS LINE

Ryoji Hanada, Isehara; Masaki Noro, Hiratsuka; Yukimasa Minami, Hiratsuka, and Motohide Takasugi, Hiratsuka, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Dec. 5, 1990, Ser. No. 622,568
Claims priority, application Japan, Dec. 19, 1989, 1-327420
Int. Cl.[5] B60C 3/00, 9/02, 9/08
U.S. Cl. 152—454 4 Claims

1. A pneumatic radial tire for a passenger vehicle, characterized in that at least a portion of a carcass line extending radially outwardly from the maximum width position in a carcass line of a tire fitted to a normal rim and inflated up to its normal internal pressure is configured so as to substantially conform to an equilibrium carcass line expressed by the following equations (1) and (2) calculated by using an internal pressure allotment ratio g(y) of a carcass layer at the tread portion that is obtained by setting the distributional configuration index α of the following equation (3) at 4 or more, and that a tread pattern having a direction property is provided to the tread surface thereof, wherein:

$$\text{in } y_D \leqq y \leqq y_A,$$

$$\eta_1 = \frac{\int_{y_D}^{y_A} g(y) \cdot y \, dy + (y_D^2 - y_C^2)/2}{g(y) \cdot y} \quad (1)$$

$$\text{in } y_B \leqq y \leqq y_D,$$

$$\eta_1 = \frac{\int_{y_D}^{y_A} g(y) \cdot y \, dy + (y_D^2 - y_C^2)/2}{y} \quad (2)$$

$$g(y) = \frac{1 - \eta}{(y_D - y_A)^\alpha} (y - y_A)^\alpha + \eta \quad (3)$$

wherein, provided that a line drawn vertically downwardly from the center of the tread portion to the axle of the tire is y axis of coordinates with the axle of the tire being z axis of coordinates, y_A, y_D, y_C, y_B and η denote as follows:

y_A: y axis of coordinates for the carcass line at the center of the tread portion;

y_D: y axis of coordinates for the carcass line at the effective width end portion of the belt layer;

y_C: y axis of coordinates for the carcass line at the maximum width position in a tire carcass line;

y_B: y axis of coordinates for the carcass line at the bead portion; and

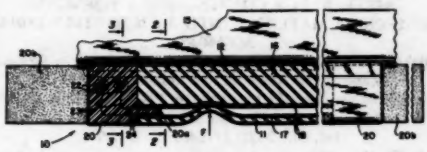
η: the internal pressure allotment ratio of the carcass layer at the center of the tread portion.

5,192,381

POWER DOOR SENSING STRIP

Robert Pariot, New Windsor, N.Y., and J. Mortimer Traugott, Riverton, N.J., assignors to Techstrip Inc., Oaklyn, N.J.

Division of Ser. No. 634,412, Dec. 27, 1990, Pat. No. 5,087,799.
This application Dec. 12, 1991, Ser. No. 806,705
Int. Cl.[5] B32B 5/20
U.S. Cl. 156—79 4 Claims



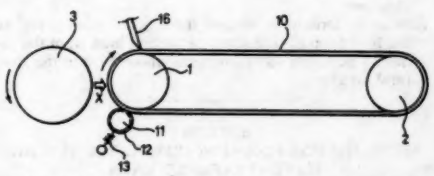
1. A process of providing an elongated sensing strip for attachment to a power door edge for sensing an object obstructing closure of the door comprising the steps of adhering two foil conductors to opposite inner sides of a flexible plastic tube, positioning an elongated jacket for the strip in a mold, inserting a mandrel into the plastic tube, positioning the plastic tube and mandrel in the mold, injecting low density urethane foaming chemicals into the mold, placing a cover in the mold engaging the edges of the jacket and the urethane, closing the mold and molding the strip under pressure, removing the formed strip from the mold and the mandrel from the tube, molding relatively incompressible plastic blocks with at least one of the blocks encapsulating electric connectors and conductors adapted to be connected to the foil conductors, and adhesively securing the molded blocks in the jacket and to the foam with the conductors electrically connected to the foil conductors in the plastic tube.

5,192,382

METHOD OF MANUFACTURING LOW-EDGE V-BELTS

Takeshi Hamura, Aichi, and Hideak; Tanaka, Hyogo, both of Japan, assignors to Mitsuboshi Belting Ltd., Hyogo, Japan

PCT No. PCT/JP90/00417, § 371 Date Jul. 6, 1991, § 102(e) Date Jul. 6, 1991, PCT Pub. No. WO91/14567, PCT Pub. Date Oct. 3, 1991
PCT Filed Mar. 28, 1990, Ser. No. 536,544
Int. Cl.[5] B29C 53/56, 59/00, 67/00
U.S. Cl. 156—137 5 Claims



1. A method of manufacturing low-edge V-belts comprising the steps of:

forming an unvulcanized belt from an inside portion to an outside portion by winding respective components comprising an elongated portion, a tension-resistant portion, and a compressed portion, in laminated form, on a circumferential surface of a forming drum;

vulcanizing said unvulcanized belt to obtain a vulcanized belt;

removing said vulcanized belt from said forming drum;

rotating said vulcanized belt on drums comprising a drive drum and a driven drum;

grinding multiple, V-shaped grooves on a surface of said vulcanized belt using a grinding wheel having a group of

adjacent grindstones, each of said grindstones exhibiting a V-shaped cross-section, said grinding wheel being in pressure contact with said vulcanized belt on one of said drive and driven drum;

causing projections arranged on a positioning member, said positioning member gradually increasing a depth of engagement, to engage with said V-shaped grooves;

and cutting said vulcanized annular body thus processed.

5,192,383

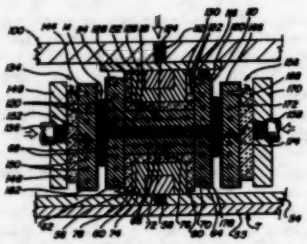
METHOD FOR CONTINUOUSLY FORMING COMPOSITE MATERIAL INTO A RIGID STRUCTURAL MEMBER

Michael G. Cavin, Federal Way, Wash., assignor to Graphite Design and Detail, Incorporated, Boulder, Colo.

Division of Ser. No. 687,121, Apr. 18, 1991, Pat. No. 5,127,980. This application Mar. 16, 1992, Ser. No. 851,935

Int. Cl.[5] B32B *17/04, 27/04, 31/04*

U.S. Cl. 156—180 **3 Claims**



1. A method of continuously forming layered composite material into a rigid structural member as the material is moved from an upstream location to a downstream location, said method comprising the steps of:

pulling uncured layered composite material from a supply at said upstream location through a forming die in incremental movements to form the material into a structural member having a desired shape;

providing a series of clamping dies for pulling, heating and cooling the structural member as it is moved from the upstream location to the downstreatm location, which are reciprocal in the upstream and downstream directions and grip the structural member when they move in the downstream direction and release the structural member when they move in the upstream direction;

providing at least one liner which extends through all of the dies between the path of the structural member and the dies; and

feeding the structural member through the liner to prevent the formation of indentions or parting lines from the dies during clamping and incremental movement of the structural member.

5,192,384

METHODS FOR FORMING COMPOSITE TUBING HAVING TAPERED ENDS

James M. Barrier, Anaheim Hills; Mark D. Drey, Murrieta; Leslie V. Montford, Pleasanton, and Stephen S. Tan, Albany, all of Calif., assignors to Kaiser Aerospace and Electronics Corporation, Foster City, Calif.

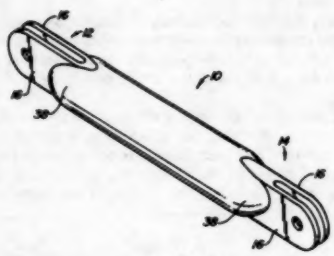
Filed May 30, 1991, Ser. No. 707,560

Int. Cl.[5] B31C *13/00*; **B65H** *81/00*

U.S. Cl. 156—189 **19 Claims**

1. A method for forming a reinforced composite tube having integral tapered ends, said method comprising:

conforming a fabric over an elongate mandrel, the mandrel having a non-tapered central portion with a first thickness, non-tapered end portions with a second thickness, the first thickness being thicker than the second thickness, and tapered portions between the central portion and end portions tapering from the first thickness to the second thickness, such that the fabric is formed into a hollow fabric structure having first and second tapered ends and an opening in at least one of said fabric structure tapered ends which is smaller than the central portion of the mandrel;



removing the mandrel from the interior of the fabric structure by disassembling the mandrel to fit through the opening;

curing a matrix precursor material in the fabric to form the reinforced composite tube

and, forming at least one of the tapered ends in the fabric into a tapered connector configuration.

5,192,385

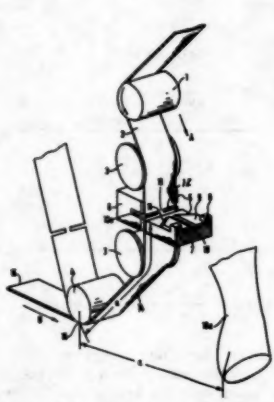
METHOD FOR THE APPLICATION OF LENGTHS OF TAPE TO A SURFACE

Karl-Andreas Moll, Kaarst, Fed. Rep. of Germany, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 738,535, Jul. 31, 1991, abandoned, which is a division of Ser. No. 345,634, May 1, 1989, Pat. No. 5,068,004. This application Jul. 29, 1992, Ser. No. 922,346

Int. Cl.[5] B32B *31/18*

U.S. Cl. 156—250 **3 Claims**



1. A method for the application of tape having a desired length to a surface by a tape applicator device including a tape applicator element for placing a trailing edge of the tape onto the surface and a tear lien forming element, comprising the steps of:

(a) adhering the trailing edge of a section of the tape tot he surface at a given application line;

(b) applying a portion of a desired length of the tape to the surface;

(c) metering the distance between the applied length of tape

and a desired leading edge of the tape by comparing an indicator provided on the tape applicator device to a desired point on the surface for the leading edge of the tape to be located;

(d) interrupting the movement of the tape at a predetermined point from the desired leading edge of the tape;

(e) forming a tear line in the tape by the tear line forming element at the predetermined distance from the desired leading edge of the tape;

(f) applying the remaining portion of the tape to the surface; and

(g) tearing the tape at the tear line so as to separate the desired length of tape from the section of tape.

5,192,386

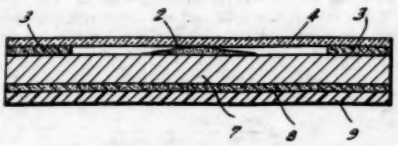
METHOD OF MAKING A COSMETIC SAMPLER

David Moir, Woodcliff Lake, and Robert M. O'Connell, Belle Mead, both of N.J., assignors to Alford Industries Inc., N.J.

Division of Ser. No. 199,175, May 26, 1988, Pat. No. 4,848,378, which is a division of Ser. No. 875,172, Jun. 17, 1986, Pat. No. 4,751,934. This application Feb. 6, 1989, Ser. No. 306,394

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—268 **14 Claims**



1. A method for making a cosmetic sampler comprising:

(a) heating an oily, non-liquid substance to be sampled into a viscous liquid;

(b) screen printing said viscous liquid onto a base comprising a pressure sensitive adhesive stock with a removable liner;

(c) applying a perimeter adhesive to said base;

(d) laminating a protective overlay to said base; and

(e) die cutting said screen printed base into labels.

5,192,387

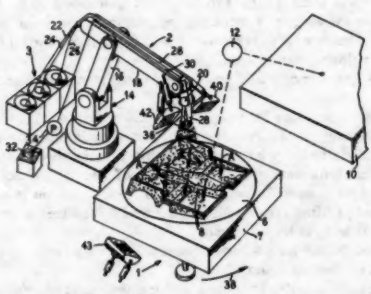
METHOD OF MAKING PREFORMS

Daniel T. Buckley, Shrewsbury, Vt., assignor to The C.A. Lawton Company, DePere, Wis.

Filed Nov. 5, 1990, Ser. No. 609,420

Int. Cl.[5] B28B *1/32*; B29C *43/02*; B32B *31/00*; D04H *1/64*

U.S. Cl. 156—275.5 **8 Claims**



1. A method for making a rigid three-dimensional structural preform using a separable mold including a perforate first mold part and a pressing second mold part, the mold parts, when closed, together defining a desired three-dimensional shape of the preform and including inner surfaces disposed at angles with respect to one another forming inside and outside corners, comprising the steps of:

(a) cutting fibers of reinforcement material into short lengths;

(b) propelling the cut fibers onto the perforate first mold part while contemporaneously flowing air through the first mold part to direct the fibers onto all surfaces of the first mold part to a predetermined thickness;

(c) spraying an electromagnetic energy-curable binder onto the cut fibers to at least partially coat the fibers with the binder without filling interstices among the fibers;

(d) closing the separable mold parts to press the binder-coated cut fibers into the desired three-dimensional shape of the preform between the pressing second mold part and the perforate first mold part of the closed mold, such that fibers bridging inside and outside corners of the closed mold are deformed into desired shapes defined by the corners of the closed mold;

(e) applying electromagnetic energy to the binder-coated pressed fibers while in the closed mold to cure the binder and bond the fibers to produce the rigid three-dimensional structural preform;

(f) opening the mold; and

(g) removing the rigid three-dimensional structural preform from the mold.

5,192,388

PROCESS AND DEVICE FOR PRODUCING A COMPOSITE WEB

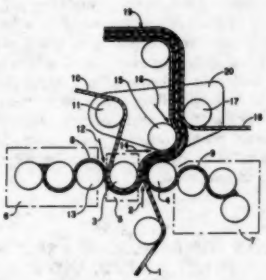
Ernst Schöllkopf, Rechthalten; Walter Rimmele, Freiburg; Roland Stiwitz, Dudingen, and Konrad Vogel, Bern, all of Switzerland, assignors to Maschinenfabrik Polytype A.G., Freiburg, Switzerland

Filed Apr. 16, 1991, Ser. No. 686,417

Claims priority, application European Pat. Off., Apr. 17, 1990, 98010299

Int. Cl.[5] B32B *31/06*

U.S. Cl. 156—324 **5 Claims**



1. A process producing a composite web from a substrate, and a first and second laminate, the first and second laminate being joined to the substrate by first and second adhesives operating at different temperatures, the method comprising the steps of:

providing a first counterroller at a first temperature, said first temperature being an operating temperature of the first adhesive;

providing a first adhesive applicator means for applying the first adhesive at said first temperature to the first laminate, and for defining a first adhesive roller gap with said first counterroller;

feeding the first laminate through said first adhesive roller gap;

combining the first laminate with the first adhesive in said first adhesive roller gap;

providing a second counterroller at a second temperature for optimal adhesion of the second adhesive between the second laminate and the substrate, said second counter-

roller being adjacent said first counterroller, said second counterroller and said first counterroller defining a counterroller gap;

providing a second adhesive applicator means for applying the second adhesive to said second counterroller and for defining a second adhesive roller gap;

feeding the first laminate combined with the first adhesive around said first counterroller at said first temperature and then through said counterroller gap;

feeding the substrate through said counterroller gap;

combining in said counterroller gap a first side of the substrate with the first laminate combined with the first adhesive; and

combining in said counterroller gap a second side of the substrate with the second adhesive from said second counterroller.

4. A process for producing a composite web, the apparatus comprising:

first adhesive applicator means for dispensing a first adhesive;

a first counterroller positioned adjacent said first adhesive applicator means and defining a first adhesive gap with said first adhesive applicator;

first feeding means for feeding a first laminate into said first adhesive gap and combining said first laminate with said first adhesive;

a second counterroller positioned adjacent said first counterroller and defining a counterroller gap;

a second adhesive applicator means for dispensing a second adhesive onto said second counterroller and defining a second adhesive gap means;

second feeding means for feeding said first laminate combined with said first adhesive around said first counterroller and into said counterroller gap, said second feeding means also feeding a substrate into said counterroller gap and combining a first side of said substrate with said first laminate and said first adhesive, said second feeding means also combining a second side of said substrate with said second adhesive from said second counterroller; and

temperature control means for controlling a first temperature of said first adhesive from said first adhesive applicator means to said counterroller gap, said first temperature being of a value for optimal adhesion between said first laminate and said substrate, said temperature control means also for controlling a second temperature of said second adhesive from said second adhesive applicator means to said counterroller gap, said second temperature being of a value for optimal adhesion between said second laminate and said substrate.

5,192,389

APPARATUS FOR PREPARING A SELF-MAILER HAVING PRINTER, FOLDER, AND TRANSPORT MEANS

Samuel W. Martin, Weston, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Continuation of Ser. No. 407,583, Sep. 14, 1989. This application Oct. 18, 1991, Ser. No. 782,749

The portion of the term of this patent subsequent to Sep. 17, 2008, has been disclaimed.

Int. Cl.[5] **B32B** *31/00*; **B43M** *3/00*

U.S. Cl. 156—364 **21 Claims**

1. Apparatus for processing a form sheet to prepare a self-mailer, said form sheet being a continuous sheet having obverse and reverse sides and including a first continuous portion and a second continuous portion, said apparatus comprising:

a) printing means, responsive to text signals defining information to be printed, for printing said reverse side of said first portion with address information; and

b) folder means for receiving said form sheet output from said printing means and folding said form sheet to prepare said self-mailer so that said self-mailer comprises an envelope having a front panel and a back panel, said folder means further comprising:

b1) first means for folding said form sheet about a first transverse line to bring said obverse side of said second portion in contact with said obverse side of said first portion;

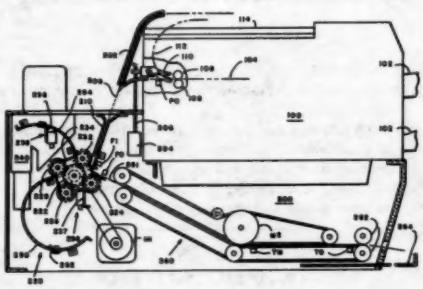
b2) second means for then folding said first and second portions about a second transverse line so that said first portion forms said envelope, with said reverse side forming the outside of said envelope and said second portion being essentially fully enclosed between and adjacent to said front and back panels; and wherein,

b3) said folder means has an input path for input of said form sheet and an exit path for output of said form sheet after folding, said input path crossing said exit path.

8. Apparatus for processing a form sheet to prepare an envelope, comprising:

a) transport means for transporting said envelope in a substantially horizontal direction, said transport means having an input substantially horizontally spaced from an output;

b) printing means positioned above said transport means, and responsive to text signals defining information to be printed, for printing said form sheet with address information, said printing means having an input vertically spaced from and horizontally substantially adjacent to said output of said transport means, and an output vertically spaced from and horizontally substantially adjacent to said input means; and



c) folder means for:

c1) receiving said form sheet as it is output from said printing means;

c2) folding said form sheet to form said envelope;

c3) as said form sheet is being folded changing the direction of motion of said form sheet such that when said form sheet is folded to form said envelope said envelope is moving in a direction substantially opposite to the direction of movement of said form sheet through said printing means; and,

c4) transferring said envelope to said transport means for output.

14. An apparatus for preparing a self-mailer, comprising:

a) printing means, responsive to text signals defining information to be printed, for printing a form sheet with address information in a first portion of said form sheet; and,

b) folder means for receiving said form sheet output from said printing means and folding said form sheet to prepare said self-mailer; wherein,

c) said folder means further comprises:

c1) a central roller;

c2) a first roller forming a first nip with said central roller, said first nip being aligned with the input path of said form sheet so as to capture said form sheet for folding;

c3) a final roller forming a final nip with said central roller, said final nip being aligned to transport along an exit path, said exit path crossing said input path;

c4) means for folding said form sheet positioned intermediate said first and final rollers.

5,192,390

MANDREL MEANS

David J. B. Perkins, Liverpool, United Kingdom, assignor to Bridgestone/Firestone Inc., Arkon, Ohio

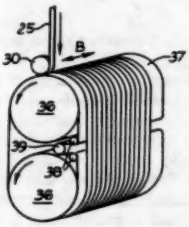
PCT No. PCT/GB88/00989, § 371 Date May 1, 1990, § 102(e) Date May 1, 1990, PCT Pub. No. WO89/04756, PCT Pub. Date Jun. 1, 1989

Continuation of Ser. No. 474,133, May 1, 1990. This PCT application Nov. 14, 1988, Ser. No. 771,883

Claims priority, application United Kingdom, Nov. 13, 1987, 8726665

Int. Cl.[5] B65H *81/00*

U.S. Cl. 156—425 **18 Claims**



1. Mandrel means; at least two support drums rotatably mounted for rotation about respective axes the relative spacing of which is selectively variable to vary the length of a peripheral path defined at least in part by said drums, a belt guide means assembly, an endless support belt which extends around said drums and belt guide means assembly and which defines at least in part a mandrel support surface, said belt guide means assembly comprising a pair of guide rollers arranged to divert the endless belt to follow an inwardly extending path between the support drums and thereby result in a peripheral discontinuity of the mandrel support surface, and said belt guide means assembly additionally comprising a belt control device to engage and maintain tension in the belt for any of a range of relative spacings of said support drums, and applicator means arranged for traversing movement across the width of the endless belt for applying strip material to the endless belt during movement of the endless belt around the drums whereby the strip material is caused to extend helically relative to said axes of rotation of the support drums.

5,192,391

APPARATUS FOR DECORATING ARTICLES HAVING A CONICAL SURFACE

Karl Kummerer, Schwanstetten, Fed. Rep. of Germany, assignor to Leonhard Kurz GmbH & Co., Fuerth, Fed. Rep. of Germany

Division of Ser. No. 582,248, Sep. 14, 1989, Pat. No. 5,139,599. This application Apr. 24, 1992, Ser. No. 873,367

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1989, 3931556

Int. Cl.[5] B44C *1/00*

U.S. Cl. 156—540 **5 Claims**

1. An apparatus for decorating articles having a conically-extending surface with a decoration from an embossing foil which comprises:

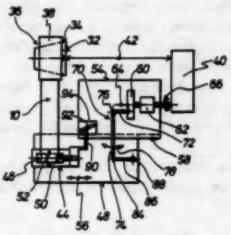
a supply roll for said embossing foil provided with a plurality of decorations;

an embossing station for receiving an article to be decorated, said embossing station including a means for holding said article to be decorated;

an embossing roller for applying said decoration to said conically-extending surface of said article;

a deflection roller disposed upstream of said embossing station in a forward feed direction of said embossing foil to guide said embossing foil towards said embossing station; and

a displacement means operatively associated with said deflection roller to displace said deflection roller in a direction parallel to an axis of said embossing roller and pivotably about a pivot axis perpendicular to its longitudinal axis, said displacement means including a stationary base member, a displacement platform linearly movable on said base member, a drive means for moving said displacement platform relative to said base member, said drive means including a disc rotatably mounted on said base member



and drivable about its central axis, said disc having a groove of a spiral configuration, said drive means further including a bell crank lever pivotally mounted to said base member and having first and second limbs, said first limb engaging into said groove, and a connecting element pivotally connected to the second limb of the bell crank lever and to said displacement platform, a mounting member supporting said deflection roller rotatably about its longitudinal axis and connected to said displacement platform pivotably about said pivot axis, a guide member associated with said base member, and a follower element carried by said member to produce pivotal movement of said mounting member.

5,192,392

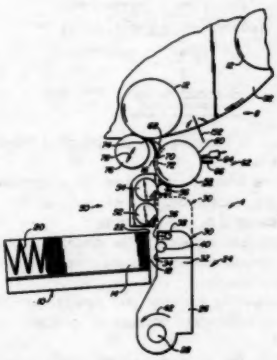
CONTAINER LABELER

Preston E. Peterson; Chester L. Peterson, and Andrew J. Ryan, all of Napa, Calif., assignors to The Bottling Room, Inc., Napa, Calif.

Filed Feb. 28, 1991, Ser. No. 662,063

Int. Cl.[5] B65C *9/00*

U.S. Cl. 156—566 **9 Claims**



1. A container labeler comprising:

a label supply hopper for storing a supply of labels and presenting a label at a label pick-off point;

a label drive assembly;

a transfer assembly including a transfer head, which transfers the label from the pick-off point to the label drive assembly, and an idler roller mounted to the transfer head;

an adhesive applying assembly;

the drive assembly driving the label from the transfer assembly to the adhesive applying assembly;

a conveyor line having a straight conveyor portion and a rotary conveyor portion thereof;

the adhesive applying assembly applying adhesive to a back side of the label and transferring the label at a chosen speed to a label applying position along the conveyor line;

the rotary conveyor portion of the conveyor line having continuously rotating pedestals configured to support and rotate the containers about the containers' own axes as the containers move along the said rotary conveyor portion line, the pedestals rotating at a speed so that the surface speed of a container supported buy the pedestal at the label applying position is generally equal to the chosen speed of movement of the label at the label applying position; and

a label pressing roller at the label applying position biased to press the label against the rotating container.

5,192,393

METHOD FOR GROWING THIN FILM BY BEAM DEPOSITION AND APPARATUS FOR PRACTICING THE SAME

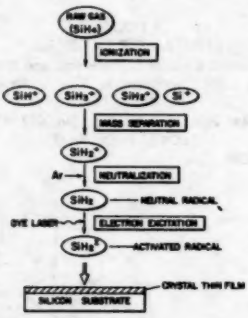
Yasushi Muranaka, Katsuta; Hisao Yamashita, Hitachi; Akira Kato, Hitachi, and Hiroshi Miyadera, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 18, 1990, Ser. No. 524,980

Claims priority, application Japan, May 24, 1989, 1-128850

Int. Cl.[5] C30B *23/08*

U.S. Cl. 156—610 **22 Claims**



1. A method of growing a thin film on a substrate, which comprises the steps of:

(I) producing ions of an element or a compound from a starting gas substance, said element or said compound being a material of the thin film;

(II) effecting neutralization of the ions by injecting electrons into the ions or transferring charges of the ions to produce neutral particles;

(III) electronically exciting said neutral particles with an electromagnetic wave without ionizing said neutral particles; and

(IV) guiding the excited neutral particles along a path towards a surface of the substrate, whereby the excited neutral particles impinge the surface and deposit thereon to form the thin film.

5,192,394

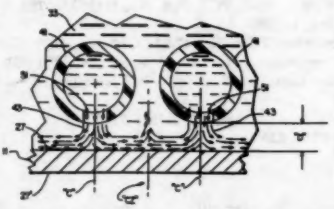
FLUID TREATMENT APPARATUS AND METHOD

Steven L. Bard, Endwell, and Jeffrey D. Jones, Newark Valley, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 16, 1991, Ser. No. 808,134

Int. Cl.[5] B44C *1/22*; C23F *1/00*

U.S. Cl. 156—640 **33 Claims**



24. A method of fluid treating a substrate, said method comprising:

moving said substrate in a predetermined direction of travel;

collecting a first fluid substantially adjacent a first surface of said moving substrate and maintaining said first fluid at a predetermined level above said first surface;

directing a plurality of fluid jets of said first fluid through said collected first fluid onto said first surface of said moving substrate at spaced-apart locations thereon in such a manner that each of said directed fluid jets maintains a sufficient velocity across said first surface to substantially prevent mixing of said directed fluid jets with said collected first fluid prior to engagement with the nearest, adjacent directed fluid jet; and

providing said first fluid at a pressure sufficient to maintain said fluid jets at said velocity across said first surface of said substrate.

5,192,395

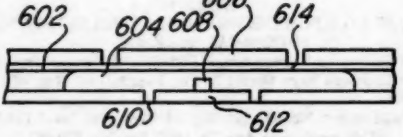
METHOD OF MAKING A DIGITAL FLEXURE BEAM ACCELEROMETER

Robert M. Boysel, and Jeffrey B. Sampsell, both of Plano, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 12, 1990, Ser. No. 596,841

Int. Cl.[5] B44C *1/22*; C23F *1/00*

U.S. Cl. 156—643 **8 Claims**



1. A process for fabrication of sensor elements comprising the following:

a) forming a ground plane layer upon a substrate;

b) fabricating addressing circuitry and electrical contacts upon said ground plane;

c) spinning a spacer layer upon the entire substrate;

d) depositing a layer of thin metal upon said spacer layer;

e) patterning said thin metal layer;

g) depositing a layer of heavy metal upon said thin metal layer;

h) patterning and forming said heavy metal layer so each sensor element has a different mass;

i) dividing said substrate into individual chips; and

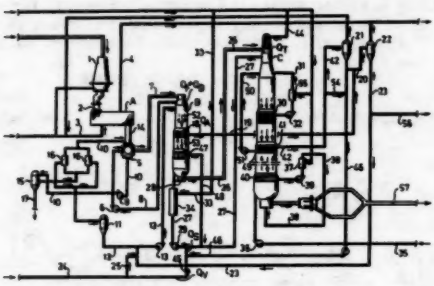
j) undercutting said spacer layer.

5,192,396

PROCESS FOR THE CONTINUOUS DIGESTION OF CELLULOSIC FIBER MATERIAL

Ake Backlund, Karlstad, Sweden, assignor to Kamyr AB, Karlstad, Sweden

Continuation of Ser. No. 420,322, Oct. 12, 1989, Pat. No. 5,080,755. This application Sep. 24, 1991, Ser. No. 765,004
Claims priority, application Sweden, Dec. 20, 1988, 8804578
The portion of the term of this patent subsequent to Jan. 14, 2009, has been disclaimed.
Int. Cl.[5] D21C *3/26, 7/12*
U.S. Cl. 162—19 20 Claims



1. A process for the continuous digestion of cellulosic fiber material using a closed impregnation system having a concurrent flow zone followed by a countercurrent flow zone, and a digester system, said process comprising the steps of impregnating the fiber material with liquid in the closed impregnation system, withdrawing a predetermined amount of liquid from the impregnation system at a point located between the concurrent flow zone and the countercurrent flow zone, and supplying to the concurrent flow zone black liquor, and to the countercurrent flow zone white liquor and a predetermined amount of black liquor and withdrawing a predetermined amount of liquid from a portion of said digester system;

wherein the liquids withdrawn from the impregnation system and the digester system are transferred to a first and a second serially connected flash cyclone for heat recovery, the black liquor supplied to the countercurrent flow zone of the impregnation system comprising the liquid withdrawn from the digester system between a digester system concurrent flow zone and a digester system countercurrent flow zone, and the black liquor supplied to the concurrent flow zone of the impregnation system comprising the effluent from said second flash cyclone which receives liquid withdrawn from the digester system via said first flash cyclone and liquid withdrawn from the impregnation system.

2. A process for the continuous digestion of cellulosic fiber material using a closed impregnation system having a concurrent flow zone followed by a countercurrent flow zone, and a digester system, said process comprising the steps of impregnating the fiber material with liquid in the closed impregnation system, withdrawing a predetermined amount of liquid from the impregnation system at a point located between the concurrent flow zone and the countercurrent flow zone, and supplying to the concurrent flow zone black liquor, and to the countercurrent flow zone white liquor and a predetermined amount of black liquor, and withdrawing a predetermined amount of liquid from a portion of said digester system;

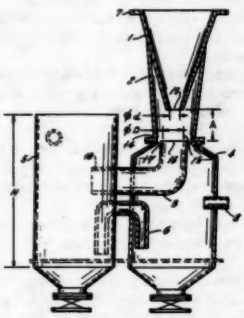
wherein the liquids withdrawn from the impregnation system and the digester system are transferred to a first and a second serially connected flash cyclone for heat recovery, the black liquor supplied to the countercurrent flow zone of the impregnation system comprising a first part of the liquid withdrawn from the digester system between a digester system concurrent flow zone and a digester system countercurrent flow zone and the effluent from said first flash cyclone which receives the other part of the liquid withdrawn from the digester system, and the black liquor supplied to the concurrent flow zone of the impregnation system comprising the effluent from said second flash cyclone which receives liquid withdrawn from the digester system via said first flash cyclone and liquid withdrawn from the impregnation system.

5,192,397

METHOD AND APPARATUS FOR CLEANING OF A PULP SUSPENSION

Ake Bohman, Johanneshov, Sweden, assignor to Milan Kolman, Sweden

PCT No. PCT/SE90/00095, § 371 Date Aug. 13, 1991, § 102(e) Date Aug. 13, 1991, PCT Pub. No. WO90/09242, PCT Pub. Date Aug. 23, 1990
PCT Filed Feb. 13, 1990, Ser. No. 761,767
Claims priority, application Sweden, Feb. 13, 1989, 8900472
Int. Cl.[5] B04C *5/14, 9/00*; D21D *5/24*
U.S. Cl. 162—55 3 Claims



3. A method for cleaning of heavy and light contaminate particles from a fibre suspension by a fibre reclaimer comprising at least one vessel (4,5) having an opening (15), which is via a connecting arrangement in the form of a cone (1), which is inserted and fixed and terminates in a conical housing (2), connected to a cyclone or cleaner, wherein said at least one vessel comprises a first vessel with the opening and at least one adjacent vessel comprising pressing a reject fraction from the cyclone or cleaner through the cone (1) and downwardly through its outlet (13) to expand in the conical housing (2) and flow the first vesesl (4) through a ring shaped opening gap (17) situated in the opening (15) of the first vessel (4) between a suction pipe (3) emerging in said opening and the first vessel (4), said suction pipe (3) having a tail end extending from said at least one adjacent vessel (5), filling said adjacent vessel with the fibre suspension by a connection pipe which connects said first vessel and said adjacent vessel, creating a vacuum so that all the fibre suspension which is near the tail end (18) of the suction pipe (3) in said adjacent vessel (5) is, due to the vacuum, resucked into the suction pipe (3) and through the cone (1) into the cyclone or cleaner.

5,192,398

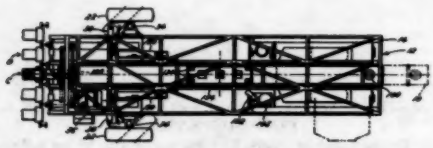
COKE BOX WITH INDIRECTLY COOLED RECEIVING CHAMBER AND EXHAUST GAS BURNER

Edward S. Kress, Brimfield, and Gene C. Carpenter, Galesburg, both of Ill., assignors to Kress Corporation, Brimfield, Ill.

Division of Ser. No. 331,519, Mar. 30, 1989, Pat. No. 4,997,527, which is a continuation-in-part of Ser. No. 185,089, Apr. 22, 1988, Pat. No. 4,886,580, which is a continuation-in-part of Ser. No. 41,876, Apr. 22, 1987, abandoned. This application Mar. 4, 1991, Ser. No. 664,330

Int. Cl.[5] C10B *39/02, 39/12*

U.S. Cl. 202—227 20 Claims



1. A coke box for dry quenching a charge of coke received from the discharge end of a coke oven comprising, in combination,

a chamber for receiving a charge of coke, said receiving chamber formed of metal panels having an exterior surface, and an interior shape and a volume in substantially the form of a rectangular parallelepiped substantially equal to that of the shape and volume of the charge of coke, the receiving chamber having a top, a bottom, and opposite sides, a rear end and a door opening,

door means for selectively closing the door opening to enclose the coke within the receiving chamber to substantially isolate the coke from the atmosphere and external cooling media,

means for cooling the exterior surface of the receiving chamber to indirectly cool the charge of coke by passing an external cooling media over the exterior surfaces of the receiving chamber,

means for creating an effective seal between the discharge end of the coke oven and the receiving chamber to substantially prevent the escape of combustible gases and particulate matter therefrom,

means defining a burner chamber for burning combustible gases and particulate matter exhausted from the receiving chamber,

and means interconnecting the receiving chamber of the coke box and the burner chamber for communicating combustible gases and particulate matter from the receiving chamber into the burner chamber.

5,192,399

PURIFICATION OF AMINONITRILES OR DIAMINES

James B. Sieja, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 648,002, Jan. 30, 1991, abandoned. This application Sep. 10, 1991, Ser. No. 757,287

Int. Cl.[5] B01D *3/10, 3/34;* C08F *20/42*

U.S. Cl. 203—36 3 Claims

1. A process for separating an aliphatic aminonitrile or diamine having 4 to 12 carbon atoms from a mixture consisting essentially of a cyclic, aliphatic, mono-unsaturated amine having a corresponding number of carbon atoms, said aliphatic aminonitrile being selected from the group consisting of 4-aminobutyronitrile, 5-aminovaleronitrile, 2-methyl-5-aminovaleronitrile, 6-aminocapronitrile, 12-aminododecanenitrile, said diamine being selected from the group consisting of 1,4-tetramethylenediamine, 1,5-pentamethylenediamine, 2-methyl-1,5-pentamethylenediamine, 1,6-hexamethylenediamine, 1,12-dodecanediamine, and said cyclic, aliphatic mono-unsaturated amine being selected from the group consisting of dihydropyrrole, tetrahydropyridine, 2-methyltetrahydropyridine, tetrahydroazepine, and mono-unsaturated cyclododecylamine, which consists essentially of adding a caustic compound to the mixture in the amount in the range of about 0.025% by weight to an amount about 5% in excess of the stoichiometric amount of the cyclic, aliphatic, mono-unsaturated amine in the mixture, and then distilling the aliphatic aminonitrile or diamine from the mixture at a temperature less than about 170 degrees C. and at a pressure less than atmospheric.

5,192,400

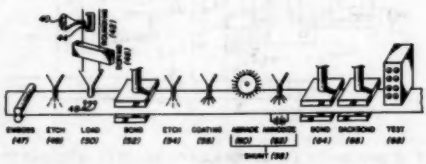
METHOD OF ISOLATING SHORTED SILICON SPHERES

Sidney G. Parker; Milfred D. Hammerbacher; Jules D. Levine, all of Dallas, and Gregory B. Hotchkiss, Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 31, 1989, Ser. No. 387,244

Int. Cl.[5] C25D *11/32*

U.S. Cl. 205—124 30 Claims



1. A method for isolating defective silicon spheres having an exposed P-type region where said spheres are affixed to a foil matrix, and comprising the steps of:

applying an insulating cover to said exposed P-type region of said spheres;

removing a portion of said insulating cover from a partial area of said sphere; and

anodizing said foil matrix and said spheres for a time sufficient to form an insulating oxide coating to those of said spheres having a short between said P-type region and said foil matrix.

5,192,401

DIAPHRAGM FOR USE IN CHLOR-ALKALI CELLS

Donald W. DuBois, Irwin, and Colonel R. Dilmore, Jeannette, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 494,911, Mar. 9, 1990, abandoned, which is a continuation of Ser. No. 284,015, Dec. 14, 1988, abandoned. This application Jan. 3, 1991, Ser. No. 637,110

Int. Cl.[5] C25B *1/16, 13/04*

U.S. Cl. 204—98 17 Claims

1. A method of preparing a liquid-permeable diaphragm for use in an electrolytic chlor-alkali cell having an anode in an anolyte compartment, a cathode in a catholyte compartment and a diaphragm that separates said anolyte and catholyte compartments, which comprises the steps of:

(a) impregnating a pre-formed, uncoated non-asbestos fibrous diaphragm comprised of material resistant to a chlor-alkali cell environment with an aqueous medium comprising water-soluble, hydrolyzable inorganic zirconium-containing compound, thereby providing said zirconium-containing compound within the diaphragm,

(b) hydrolyzing the impregnated zirconium-containing compound, thereby to form hydrous oxide of zirconium,

(c) drying the zirconium hydrous oxide-containing diaphragm to a moisture content of less than about 10 weight percent, thereby to deposit particulate substantially unhydrated zirconia within the fibrous diaphragm, and

(d) depositing a topcoating of inorganic, particulate refractory material on the anode face of the particulate zirconia-containing diaphragm of step (c), said particulate refractory material being selected from the group consisting of

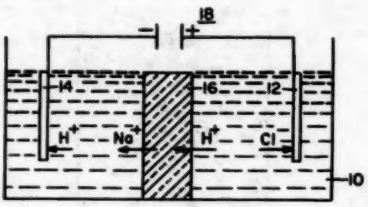
silicon carbide, the oxides, borides, carbides, silicates or nitrides of valve materials selected from the group consisting of vanadium, chromium, zirconium, niobium, molybdenum, hafnium, tantalum, titanium and tungsten, and mixtures of such particulate refractory materials.

7. The method of claim 1 wherein the particulate refractory material is selected from the group consisting of finely-divided zirconium oxide, zirconium silicate and mixtures thereof.

5,192,402
METHOD OF DEALKALIZING GLASS

Roger J. Araujo, and Walter F. Love, both of Horseheads, N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Feb. 13, 1992, Ser. No. 834,840
Int. Cl.[5] C25F 5/00
U.S. Cl. 204—130 22 Claims



1. A method of removing alkali metal ions from a glass body that contains at least one alkali metal ion, the method comprising the steps of bringing a hydrogen-ion-producing anode into intimate contact with a portion of the glass body surface, bringing an oxide receptor of the alkali metal ion to be removed into intimate contact with another portion of the glass body surface as a cathode, and exposing the assembly of glass body and electrodes to a hydrogen-containing atmosphere while the assembly is at an elevated temperature and has a direct current applied across the electrodes.

5,192,403
CYCLIC VOLTAMMETRIC METHOD FOR THE MEASUREMENT OF CONCENTRATIONS OF SUBCOMPONENTS OF PLATING SOLUTION ADDITIVE MIXTURES

I-Chia H. Chang, Peekskill, and Wilma J. Horkans, Ossining, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 16, 1991, Ser. No. 701,278
Int. Cl.[5] G01N 27/26
U.S. Cl. 204—153.1 7 Claims

1. A cyclic voltammetric method for measuring concentrations of subcomponents of additive mixtures, comprising the steps of:

(a) preparing a basis solution which contains all of the components of an unknown solution to be measured, except a component of interest;

(b) preparing a calibration solution which contains said component of interest in a known concentration near that which would be expected in said unknown solution;

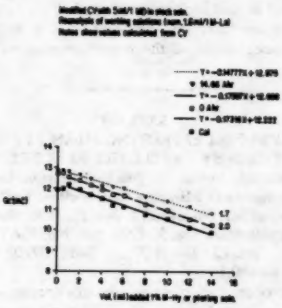
(c) adding measured amounts of said calibration solution to a first defined volume of said basis solution;

(d) applying an electrical potential to an electrode in the mixed calibration/basis solution and plotting the calibration cathodic charge against the added volume of the calibration solution;

(e) adding measured amounts of said unknown solution to a second volume of said basis solution;

(f) applying an electrical potential to an electrode in the mixed unknown/basis solution and plotting the cathodic charge against the added volume of the unknown solution; and

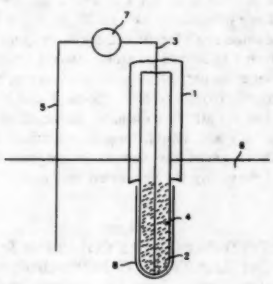
(g) comparing the slopes of the calibration and unknown cathodic charge versus volume curves to determine the concentration of said component of interest in said unknown solution.



5,192,404
METHOD FOR MEASURING A MINOR ELEMENT IN A MOLTEN METAL

Derek J. Fray, and Ramachandran V. Kumar, both of Cambridge, United Kingdom, assignors to Mineral Industry Research Organisation, London, United Kingdom

Division of Ser. No. 417,764, Oct. 6, 1989, abandoned. This application Sep. 18, 1991, Ser. No. 762,076
Claims priority, application United Kingdom, Oct. 6, 1988, 8823507
Int. Cl.[5] G01N 27/411
U.S. Cl. 204—153.19 7 Claims



1. A method for the detection and measurement of a minor element in a molten metal, said minor element being selected from the group consisting of phosphorous, silicon, arsenic, antimony and sulphur comprising:

immersing a first electrical lead in said molten metal;

disposing a solid electrolyte in said molten metal in spaced relationship to said first electrical lead, said solid electrolyte comprising a matrix of alumina selected from the group consisting of β-alumina and $\alpha+\beta$ alumina and including a compound comprising the element to be detected and measured, oxygen, and an element selected from the group consisting of alkali and alkaline earth metal elements, said elements being chemically combined with said oxygen, said compound dissociating into its

constituent elements under the condition of measurement in said molten metal;

connecting a second electrical lead to said solid electrolyte matrix so that said solid electrolyte matrix is between said leads and separates said second lead from said first lead when said first lead and said solid electrolyte matrix are disposed in said molten metal; and

measuring the EMF between said leads as an indication of the concentration of the minor element in said molten metal.

5,192,405

PROCESS FOR EFFECTING HIGH EFFICIENCY SEPARATIONS BY CAPILLARY ELECTROPHORESIS

John S. Petersen, Acton, and Michael Merion, Upton, both of Mass., assignors to Millipore Corporation, Bedford, Mass.

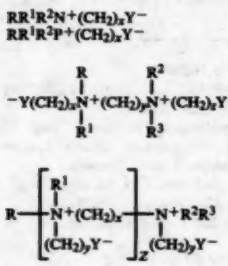
Continuation of Ser. No. 640,177, Jan. 11, 1991, abandoned. This application Sep. 9, 1991, Ser. No. 756,718

Int. Cl.[5] G01N *27/26*; B01D *57/02*

U.S. Cl. 204—180.1 **16 Claims**

1. The process for effecting electrophoretic separation of molecules in a sample within a capillary which comprises:

introducing into said capillary a buffer solution containing at least one zwitterion comprised of substantially equal numbers of positive and negative charges and having the formula selected from the group consisting of:



Formula I

Formula II

Formula III

Formula IV

and mixtures thereof wherein x, y and z can be the same or different and are integers from 1 to 30; R, R^1, R^2, R^3, R^4 and R^5 can be the same or different and are hydrogen, alkyl groups containing from 1 to 30 carbon atoms, two R groups bonded to the same nitrogen as part of a cyclic structure or hydroxyalkyl groups containing from 1 to 30 carbons: Y can be the same or different and is sulfate or sulfonate, introducing said sample into said capillary and establishing an electrical field through said capillary to cause the sample to migrate through said capillary and detecting the separated analytes.

5,192,406

DEACTIVATED CAPILLARY COLUMNS FOR USE IN CAPILLARY ELECTROPHORESIS

Cole L. Woolley, Centre Hall, Pa., assignor to Supelco, Bellefonte, Pa.

Filed Jan. 9, 1991, Ser. No. 638,934

Int. Cl.[5] G01N *27/26, 27/447*; B01D *57/02*

U.S. Cl. 204—180.1 **13 Claims**

1. A method of performing capillary zone electrophoresis separations and micellar electrokinetic capillary chromatography separations which comprises the steps, performed in the order in which they appear, of

(a) introducing a buffered solution of analytes into a small-bore, glass or fused-silica capillary column having a bore diameter smaller than about 100 μm; having its inner surface covalently bonded to a polymer having a silicon backbone selected from the group consisting of polymeric silyl hydrides, polymeric siloxanes, polymeric cyclic siloxanes, polymeric silazanes and silicone polymers; and having its bore filled with a buffer solution,

(b) establishing a high-voltage differential from one end of the column to the other,

(c) allowing the analytes to separate within the column and migrate from the column in the buffer solution as it exits the column by electro-osmotic flow, and

(d) detecting the analytes in the buffer solution at or near the end of the column.

5,192,407

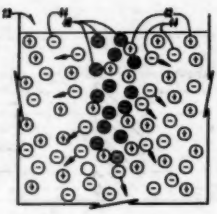
MEANS AND METHOD OF DETECTION IN CHEMICAL SEPARATION PROCEDURES

Edward S. Yeung; Lance B. Koutny; Barry L. Hogan; Chan K. Cheung, and Yinfa Ma, all of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Jan. 30, 1990, Ser. No. 472,315

Int. Cl.[5] G01N *27/26, 27/447*; B01D *57/02*

U.S. Cl. 204—182.8 **27 Claims**



1. The method of detection of certain components of a mixture in gel electrophoresis, comprising:

taking an encapsulated gel segment comprised of a gel slab means;

impregnating said gel segment with a fluorescing substance comprised of positive and negative ions to create a generally uniform background fluorescence across said segment when the fluorescing substance is excited;

imposing an electrical potential through said segment to enable electrophoresis;

injecting in said gel segment a liquid specimen of an ionic mixture having constituent ionic molecular components to be detected, each component having an ionic charge of one of the set consisting of positive and negative charges, whereby each component of said specimen will generally rectalinearly migrate in said gel segment according to type and magnitude of electrical charge and will create a negative image at the end of migration by displacing the identically charged ions of the fluorescing substance in that general area within said gel segment;

measuring the length of the rectalinear migration of each negative image within said gel segment; and

comparing said length of migration of any negative image within said gel segment with lengths of migration of known ionic molecular components in a similar gel segment to identify the components of the mixture by correlating said lengths of migration with known ionic molecular components having similar lengths of migration.

5,192,408

ELECTROPHORESIS GEL SEALING GASKET AND SYSTEM

Charles B. Scott, Rancho Santa Fe, Calif., assignor to CBS Scientific, Inc., Del Mar, Calif.

Filed Aug. 27, 1991, Ser. No. 750,826

Int. Cl.[5] G01N *27/26*

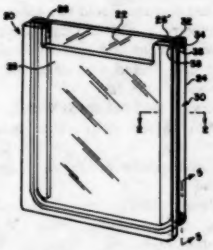
U.S. Cl. 204—182.8 **23 Claims**

1. An electrophoresis gel casting chamber sealing gasket comprising an elongate deformable member comprising:

a plate retention channel portion adapted to conform to and

releasably retain a portion of the edge of a substantially planar base plate; and

a gasket portion formed integral with said plate retention



channel portion and adapted to form a seal between a face of said base plate and a face of a substantially planar top plate placed in close proximity thereto, thereby forming a gel casting chamber.

5,192,409

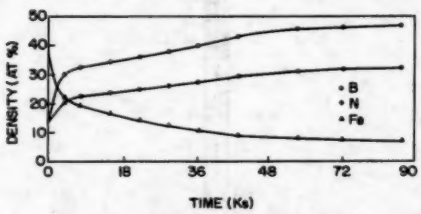
METHOD OF SPUTTERING A MIXTURE OF HEXAGONAL BORON NITRIDE AND STAINLESS STEEL ONTO A STEEL VESSEL AND HEATING THE FILM SO AS TO PRECIPITATE THE BORON NITRIDE ONTO THE FILM SURFACE

Masahiro Tosa, and Kazuhiro Yoshihara, both of Ibaragi, Japan, assignors to National Research Institute For Metals, Tokyo, Japan

Division of Ser. No. 491,428, Mar. 9, 1990. This application Apr. 3, 1992, Ser. No. 863,041

Int. Cl.[5] C23C *14/00*

U.S. Cl. 204—192.16 **2 Claims**



1. A low-temperature coating method for high-vacuum materials comprising depositing, through sputtering, a mixture film of stainless steel/boron nitride on the surface of a metal or an alloy and heating the same in a vacuum to around 300° C. to allow hexagonal boron nitride to precipitate on the surface thereof.

5,192,410

PROCESS FOR MANUFACTURING MULTI CERAMIC LAYER-COATED METAL PLATE

Wataru Ito; Shumpei Miyajima; Misao Hashimoto, all of Kawasaki; Isao Itoh, and Tadashi Komori, both of Hikari, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Division of Ser. No. 385,413, Jul. 26, 1989, Pat. No. 5,079,089. This application Oct. 4, 1991, Ser. No. 771,211

Claims priority, application Japan, Jul. 28, 1988, 63-186940

Int. Cl.[5] C23C *14/34, 14/32*

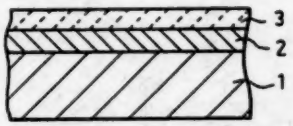
U.S. Cl. 204—192.16 **5 Claims**

1. A process for manufacturing a multi ceramic layer-coated stainless steel plate, comprising the steps of:

providing a stainless steel plate;

dry depositing a colored ceramic layer by ion plating or sputtering over and adjacent to the stainless steel plate, the colored ceramic layer being made of at least one member selected from the group consisting of nitrides and carbides of titanium, zirconium, hafnium, chromium, niobium, and aluminum and having a thickness of 0.1 μm to 1 μm; and

dry depositing a transparent ceramic layer by plasma CVD



or sputtering over and adjacent to the colored ceramic layer, the transparent ceramic layer being made of at least one member selected from the group consisting of silicon oxide, silicon nitride, and aluminum oxide and having a thickness of 0.1 μm to 3 μm, whereby the metal plate is provided with an interference color.

5,192,411

ELECTRODE FOR ELECTROCHEMICAL REACTORS

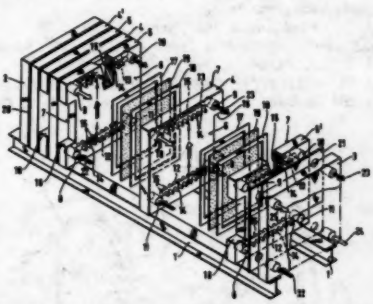
Hans-Karl W. vom Baur, deceased, late of Frankfurt am Main by Elke H. vom Baur née Spiller, Silke V. C. vom Baur, legal heirs; Steffen Dapperheld, Hofheim am Taunus; Klaus Kretschmann, Bischofsheim; Werner Lindner, Hofheim am Taunus; Rudolf Rossmeissl, Mertingen; Hans Milluwe, Eschborn, and Gerhard Ullmann, Gross-Gerau, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 8, 1991, Ser. No. 638,839

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1990, 4000505

Int. Cl.[5] C25B *11/02*

U.S. Cl. 204—280 **3 Claims**



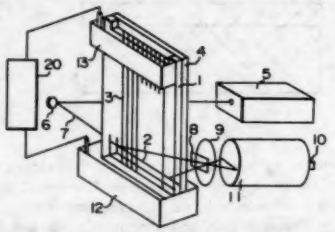
1. An electrode in the form of a rectangular parallelpiped composed of impregnated graphite material for electrochemical reactors, wherein the electrode is provided with openings extending perpendicular to its active electrode surfaces at its corners thereby defining collection channels for electrolyte, canals which extend parallel to the active electrode surfaces in the direction of adjacent openings across the electrode originating from said perpendicular openings situated diagonally opposite each other, and the canals feeding electrolyte into communicating channels which feed electrolyte directly to the active electrode surfaces.

5,192,412

ELECTROPHORETIC APPARATUS HAVING ARRAYED ELECTROPHORESIS LANES

Hideki Kambara, Hachioji, and Keiichi Nagai, Higashiyamato, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 29, 1991, Ser. No. 800,042
Claims priority, application Japan, Nov. 30, 1990, 2-337074
Int. Cl.[5] G01N 27/26
U.S. Cl. 204—299 R 21 Claims



1. An electrophoretic apparatus comprising:

an electrophoresis panel including first and second plane plates, a principal surface of said first plane plate being in close contact with said second plane plate and being provided with a plurality of lengthwise grooves which do not intersect one another and a widthwise groove intersecting said lengthwise grooves and extending to opposite edges of said principal surface of said first plane plate, said lengthwise grooves defining gaps adapted to be filled with an electrophoresis medium to provide a plurality of electrophoresis lanes;

voltage applying means for applying an electric field for electrophoresis to said plurality of electrophoresis lanes; and

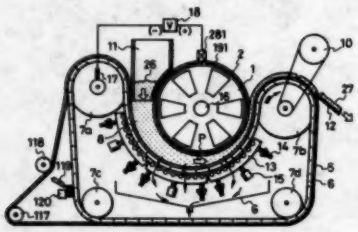
detection means for discretely detecting fragments passing through the electrophoresis lanes at predetermined detection positions in the electrophoresis panel.

5,192,413

ELECTROOSMOTIC DEWATERER

Mikimasa Yamaguchi; Michio Nakagawa; Hideyuki Ohanamori; Masayuki Yoshida; Toshitaka Arai, and Hiroshi Matsushita, all of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Aug. 6, 1987, Ser. No. 82,332
Claims priority, application Japan, Apr. 13, 1987, 62-90026; Apr. 13, 1987, 62-90030
Int. Cl.[5] B01D 61/42; C03C 5/02; C02F 11/12, 1/469
U.S. Cl. 204—300 R 15 Claims



1. An electroosmotic dewaterer for dehydrating a liquid substance, comprising:

a power supply for generating a d.c. voltage;

an anode electrode for applying said d.c. voltage to the liquid substance, said anode electrode being mounted to a rotary body;

an insulation member covering all of the outer surface along the periphery of said rotary body, said anode electrode arranged over said insulation member, said insulation member electrically insulating and completely physically isolating said anode from said rotary body;

a cathode electrode facing said anode electrode for applying said d.c. voltage to the liquid substance located between said anode electrode and said cathode electrode and for collecting water from said liquid substance to cause the formation of dehydrated mud cake and mineral deposits on said cathode electrode;

means for receiving said collected water;

means for removing said dehydrated mud cake from said cathode electrode;

means for removing mineral deposits from said cathode electrode; and

means for applying said d.c. voltage from said power supply means to the surface of said anode electrode facing out from said rotary body.

5,192,414

ELECTRODE PROBE FOR USE IN AQUEOUS ENVIRONMENTS OF HIGH TEMPERATURE AND HIGH RADIATION

Maurice E. Indig, Fremont, and Jerry F. Hanlon, Livermore, both of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Dec. 20, 1990, Ser. No. 633,748
Int. Cl.[5] G01N 27/30
U.S. Cl. 204—400 18 Claims

1. An electrode probe for employment in monitoring electrochemical potentials, comprising:

(a) a metal cap electrode having a tip, and an annulus extending therefrom which defines a cavity having an interior surface;

(b) an elongate annular metal jacket having an annular retainer securing mouth at one end and an outlet at its opposite end;

(c) an alumina retainer having a recessed cap securing portion nestably disposed within said cap electrode cavity and sealingly attached thereto, and an oppositely-disposed recessed jacket securing portion nestably secured to the interior of said annular jacket retainer securing mouth, and an access channel penetrating therethrough from said cap to said jacket securing portion;

(d) a first insulated electrical conductor in electrical connection with said cap electrode and extending through said retainer access channel and through said annular metal jacket to said jacket outlet;

(e) a positioning and signal transfer assembly associated with

said jacket outlet for providing support for said jacket and for conveying electrical signals from said conductor; and

(f) an annular metal transition sleeve interposed between said annular metal jacket and said positioning and signal transfer assembly, said metal transition sleeve being formed of a material which is different than the material from which said annular metal jacket is formed.

5,192,415

BIOSENSOR UTILIZING ENZYME AND A METHOD FOR PRODUCING THE SAME

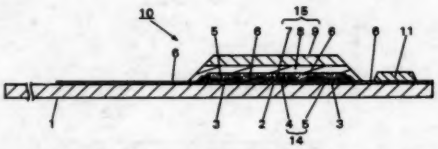
Toshihiko Yoshioka, Osaka, and Shiro Nankai, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 2, 1992, Ser. No. 845,073

Claims priority, application Japan, Mar. 4, 1991, 3-37259; Mar. 4, 1991, 3-37261; Sep. 2, 1991, 3-221402; Jan. 14, 1992, 4-04592

Int. Cl.[5] G01N *27/26*

U.S. Cl. 204—403 **13 Claims**



1. A biosensor for quantifying a substrate contained in a sample liquid by reducing electron acceptors using electrons generated in a reaction of the substrate to enzyme and then by measuring the reduced amount of the electron acceptors electrochemically, the biosensor comprising:

an electrical insulating substrate, an electrode system including at least a working electrode and a counter electrode which are formed on the insulating substrate, a reaction layer including the enzyme provided on the electrode system, and a hydrogen ion concentration control layer;

the reaction layer being in contact with the electrode system.

5,192,416

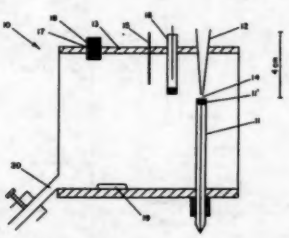
METHOD AND APPARATUS FOR BATCH INJECTION ANALYSIS

Joseph Wang, and Ziad H. Taha, both of Las Cruces, N. Mex., assignors to New Mexico State University Technology Transfer Corporation, Las Cruces, N. Mex.

Filed Apr. 9, 1991, Ser. No. 682,907

Int. Cl.[5] G01N *27/26*

U.S. Cl. 204—409 **38 Claims**



1. A batch injection analysis apparatus for measuring analyte sample concentration comprising:

vessel means;

single batch electrolyte means confined within said vessel means;

means for serially introducing into said vessel means, for dilution in said single batch electrolyte means, multiple analyte samples to be analyzed, the volume of each said analyte sample having a proportional ratio to the volume of said single batch electrolyte means within the range of 1/20,000 to 1/50,000;

planar detection means in said vessel means for sensing said analyte samples to be analyzed; and

means for analyzing said analyte samples.

5,192,417

LITHIUM ION SENSOR

Noboru Oyama, Fuchu, and Toshiyuki Shono, Suita, all of Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

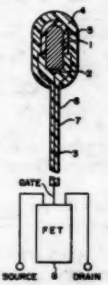
Filed Oct. 5, 1990, Ser. No. 593,520

Claims priority, application Japan, Sep. 21, 1987, 62-234956

The portion of the term of this patent subsequent to Mar. 28, 2006, has been disclaimed.

Int. Cl.[5] G01N *27/30*

U.S. Cl. 204—418 **6 Claims**



1. A lithium ion sensor comprising:

a FET;

a redox layer having a redox function covering a gate isolating membrane of said FET wherein said redox layer is obtained by electrolytically polymerizing a p-p'biphenol; and

a lithium ion-sensitive layer for selectively sensing lithium ion covering said redox layer, said lithium ion-sensitive layer being a polyvinyl chloride layer containing dibenzyl-14-crown-4, a derivative of dibenzyl-14-crown-4 or a mixture thereof, dioxaheptyl-dodecyl-14-crown-4, a derivative of dioxaheptyl-dodecyl-14-crown-4 or a mixture thereof, or diethoxyphosphorioxyethyl-dodecyl-14-crown-4, a derivative of diethoxyphosphorioxyethyl-dodecyl-14-crown-4 or a mixture thereof.

5,192,418

METAL RECOVERY METHOD AND SYSTEM FOR ELECTROPLATING WASTES

Charles R. Hughes; Stewart T. Herman, both of Hellertown, and Richard N. Steinbicker, Allentown, all of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Jul. 8, 1991, Ser. No. 726,931

Int. Cl.[5] C02F *1/00*

U.S. Cl. 205—100 **18 Claims**

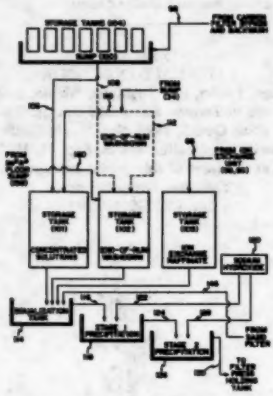
1. The method of recovering useful metals used in a plating system from a plurality of process streams including the steps of:

a) providing a first process stream having a constant flow and concentration of a useful metal;

b) concentrating the useful metal in the first stream to a level sufficient to permit return thereof to the plating system and thereby simultaneously create a dilute raffinate stream;

c) providing a second process stream having a varying flow and concentration of a useful metal;

d) blending the raffinate stream with the second process stream and thereby creating a blended stream;
e) subsequently neutralizing free acid in the blended stream by adding a base thereto;



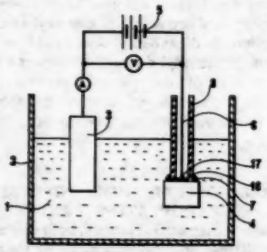
f) subsequently precipitating the useful metal in the neutralized stream by adding a sufficient amount of base thereto; and,
g) removing water from the precipitated useful metal.

5,192,419

METHOD FOR PRODUCING A ZINC SELENIDE BLUE LIGHT EMITTING DEVICE

Koichi Matsuura; Fuminori Takeda, both of Tottori, and Kenichi Kurisu, Osaka, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Sep. 25, 1991, Ser. No. 765,425
Claims priority, application Japan, Sep. 25, 1990, 2-255923
Int. Cl.[5] C25D *3/56, 7/12*
U.S. Cl. 205—244 **2 Claims**



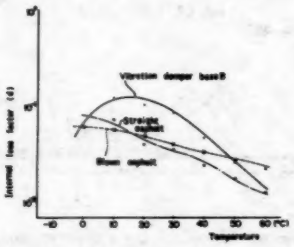
1. A method for producing a ZnSe blue light emitting device comprising the steps of:
mixing sodium sulfite (Na_2SO_3), selenium (Se) and water (H_2O) to produce a selenium sulfite ($SeSO_3$) solution;
mixing sodium nitrilotriacetic acid (Na_2—NTA) and zinc chloride ($ZnCl_2$) with the selenium sulfite solution to prepare a material solution;
connecting a platinum wire to a low-resistivity n-type ZnSe singlecrystal substrate;
immersing the low-resistivity n-type ZnSe singlecrystal substrate and a zinc electrode into the material solution being kept between room temperature and 70° C.;
sending an electric current from the zinc electrode as an anode to the n-type ZnSe singlecrystalline substrate as a cathode;
depositing a p-type ZnSe film on the n-type ZnSe singlecrystalline substrate; and
forming electrodes on the p-type ZnSe film and on the n-type ZnSe singlecrystalline substrate.

5,192,420

VIBRATION DAMPER OBTAINED BY ADJUSTING THE RESIN AND AROMATIC COMPONENTS OF THE ASPHALT BASE

Humio Ohta, Hanazono, and Tadahiko Matsumzawa, Yorii, both of Japan, assignors to Kabushiki Kaisha Asahi Corporation, Tokyo, Japan

Filed Dec. 10, 1990, Ser. No. 625,011
Int. Cl.[5] C10C *3/00*
U.S. Cl. 208—23 **7 Claims**



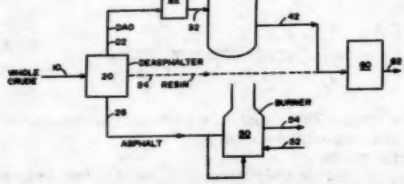
1. A vibration damper comprising:
30–70 wt. % of a vibration damper base containing approximately 30–38 wt. % of a resin component and approximately 55–65 wt. % of aromatic components and obtained either by adjusting the components contained in an asphalt base crude oil in the course of its refining or by blending and adjusting a resin component and aromatic component contained in petroleum asphalt; and
50–20 wt. % of an inorganic filler in the form of a thin flake of 20–200 mesh,
the sum of said vibration damper base and filler being at least 80 wt. %.

5,192,421

INTEGRATED PROCESS FOR WHOLE CRUDE DEASPHALTING AND ASPHALTENE UPGRADING

Costandi A. Audeh, and Lillian A. Rankel, both of Princeton, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Apr. 16, 1991, Ser. No. 685,758
Int. Cl.[5] C10C *3/00;* **C10G** *7/00;* **B01D** *3/00*
U.S. Cl. 208—309 **11 Claims**



1. A process for recovering distilled hydocarbon product from a whole asphaltic crude comprising at least 40 volume % non-distillable residue at distillation conditions and thermally

unstable, high boiling, metal containing compounds present in said non-distillable residue comprising

(a) deasphalting the asphaltic crude in a deasphalting means to produce a deasphalted oil with a reduced asphalt content relative to the feed and wherein the whole crude is deasphalted by contact with an aromatic solvent, then contacted with an aliphatic solvent to precipitate asphalt components,

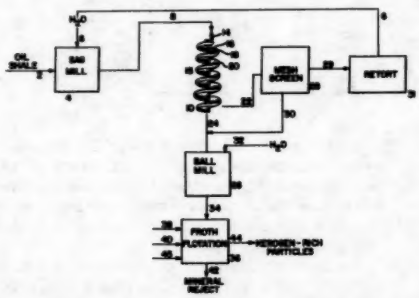
(b) heating the deasphalted crude to a temperature in excess of 500° F. in a downstream refinery process.

5,192,422

OIL SHALE BENEFICIATION PROCESS USING A SPIRAL SEPARATOR

Bernard Y. C. So, Wheaton, Ill., assignor to Amoco Corporation, Chicago, Ill.

Filed Dec. 31, 1991, Ser. No. 817,794
Int. Cl.[5] B03B *5/62, 7/00*; B03D *1/02*
U.S. Cl. 209—164 **19 Claims**



1. A method of beneficiating oil shale, comprising the steps of:

(a) comminuting said oil shale in the presence of a first liquid to form a first stream comprising a first group of kerogen-rich particles, a first group of mineral-rich particles, and said first liquid, said kerogen-rich particles having a specific gravity less than that of said mineral-rich particles;

(b) flowing said first stream in a downward helical course such that said stream is confined in a manner to give said first stream an outer and upper side having a first depth and comprising a first portion of said kerogen-rich particles, and an inner and lower side having a second depth and comprising said mineral-rich particles and a second portion of said kerogen-rich particles, said first depth being greater than said second depth;

(c) separating said first portion of said kerogen-rich particles from both of said mineral-rich particles and said second portion of said kerogen rich particles;

(d) retorting said first portion of said kerogen-rich particles;

(e) comminuting said mineral-rich particles and said second portion of said kerogen-rich particles in the presence of a second liquid to form a second stream comprising a second group of kerogen-rich particles, a second group of mineral-rich particles, and a second liquid; and

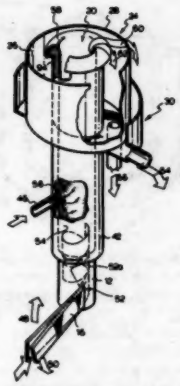
(f) contacting said second stream with a frothing agent to form a frothing mixture and treating said frothing mixture by froth flotation, whereby air bubbles adhere to the second group of kerogen-rich particles, thereby causing said second group of kerogen-rich particles to float above said mixture and form a kerogen-rich froth and a mineral-rich mixture, separating said kerogen-rich froth from said mineral-rich mixture, and recovering said second group of kerogen-rich particles.

5,192,423

APPARATUS AND METHOD FOR SEPARATION OF WET PARTICLES

Tomasz Duczmal, and Jakob H. Schneider, both of Calgary, Canada, assignors to Hydro Processing & Mining Ltd., Calgary, Canada

Filed Jan. 6, 1992, Ser. No. 817,298
Int. Cl.[5] B03C *1/30*; B03D *1/24, 1/14*; B04C *3/00*
U.S. Cl. 209—164 **27 Claims**



1. A process for separating particles in a slurry based on different physical, magnetic and/or chemical properties of said particles, said slurry including a mixture of solid particles and/or liquid particles which are immiscible in said slurry, said process comprising:

i) introducing a stream of said slurry into a cylindrical chamber having a cylindrical inner wall, said chamber being vertically oriented and closed at its lower end and open at its end, said stream being introduced near said closed lower end at an incline end and tangentially of said chamber to develop a spiral flow of said stream along said chamber inner wall toward said open end,

ii) introducing said stream in sufficient volume and pressure to develop a vortex in said slurry which extends downwardly from said chamber upper end,

iii) introducing air into said stream during at least a portion of its upward travel in said chamber, said air being introduced to said stream through means located at said chamber inner wall and for developing said air bubbles which move into said stream,

iv) said chamber being of a height sufficient to provide a residence time in said chamber which permits a separation of particles on their physical, electrical and/or chemical properties with at least lighter hydrophobic particles combining with air bubbles and moving inwardly towards said vortex and at least heavier particles under influence of centrifugal forces of said spiral flow, moving outwardly towards said chamber inner wall, said stream developing into a whirlpool at said chamber upper end,

v) directing said whirlpool stream outwardly at said open end into a catch basin surrounding said open end, said whirlpool stream swirling outwardly as said stream flows into said catch basin having a liquid level proximate said open end to permit said air bubbles to float toward a peripheral edge of said catch basin,

vi) separating said floating air bubbles with lighter hydrophobic particles from said heavier particles by collecting outwardly floating air bubbles from an upper zone of said catch basin, while said heavier particles sink downwardly of said catch basin and removing said heavier particles from a lower zone of said catch basin to effect said separation.

5,192,424

FILTER IDENTIFICATION DEVICE

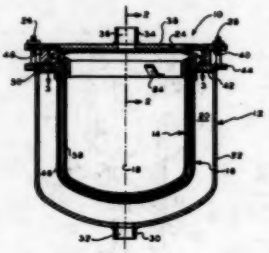
Patrick Beyne, Suresne, and Georges Seon, Saint-Witz, both of France, assignors to ISP Investments Inc., Wilmington, Del.

Filed Dec. 5, 1991, Ser. No. 802,587

The portion of the term of this patent subsequent to Dec. 24, 2008, has been disclaimed.

Int. Cl.[5] B01D *29/11*

U.S. Cl. 210—85 **12 Claims**



1. A filter apparatus comprising:

an enclosure subassembly having an axis and having a housing with a top flange and having a cover plate connected to the housing;

a basket subassembly having a basket portion and having an annular ring in sealing engagement with the top flange;

an identification subassembly having a filter bag and an integral collar in sealing engagement with the annular ring and with the cover plate;

said collar having a lower portion fixedly connected to the filter bag and having a middle portion supported by the annular ring and having a top lip portion engaging the cover plate;

said collar having an inner surface with an inner groove having a lower sidewall disposed adjacent to the middle portion and having an upper sidewall disposed adjacent to the top lip portion;

said collar having a pivotable web portion disposed between the middle portion and the top lip portion;

said identification subassembly having a cantilever identification tag fixedly connected to the collar; said identification tag having a face which contains information related to the apparatus, wherein the tag is connected to indicating means for signalling the presence of the filter in place, and wherein the indicating means is a slot through which the tag passes and an electrical switch for indicating the presence of the tag in the slot.

5,192,425

MOUNTING BASE AND ASSEMBLY FOR PRESSURE SENSOR, FILTER AND PRESSURE RELIEF VALVE

Norman A. Cyphers, Rogers; Dwaine D. Straight, St. Paul, and Robert D. Cooper, Jr., Blaine, all of Minn., assignors to Wagner Spray Tech Corporation, Minneapolis, Minn.

Filed Jul. 22, 1991, Ser. No. 733,226

Int. Cl.[5] B01D *35/14;* **B67D** *5/33, 5/58;* **G01L** *7/06*

U.S. Cl. 210—90 **16 Claims**

1. A combined pressure sensor and filter assembly for pressurized painting systems comprising:

a) a strain gage type pressure sensor for transducing pressure in a paint supply line;

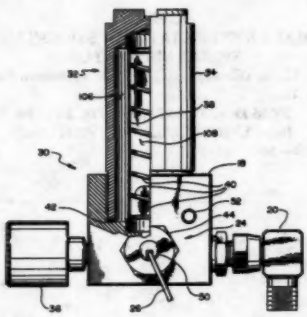
b) a cylindrical filter having an upstream side and a downstream side and located downstream from the pressure sensor for removing particulates from paint in the paint supply line;

c) a pressure relief valve located upstream of the filter for limiting pressure in the paint supply line from rising above a predetermined maximum pressure;

d) a base formed of a single block of metal and having a plurality of faces on the exterior thereof and carrying the pressure sensor, filter and pressure relief valve and wherein the base has

i) a first straight bore extending through first and second faces of the base and forming an inlet port at an upstream end thereof in the first face and a pressure relief valve mounting port receiving and mounting the pressure relief valve therein at a downstream end of the first bore in the second face,

ii) a second bore extending from a third face into the base transverse to and intersecting the first bore, the second bore forming a pressure sensor mounting port,



iii) a third bore extending from a fourth face into the base transverse to the first ore and having at least one channel communicating between the first and third bores and wherein the third bore forms a filter mounting port such that the channel is in communication with the upstream side of the filter, and

iv) a fourth bore extending from a fifth face into the base forming a paint outlet port and communicating with the downstream side of the filter

wherein the flow path from the inlet path past the pressure sensor is relatively streamlined such that paint solids are carried away from the pressure sensor when a solvent is flushed through the base.

5,192,426

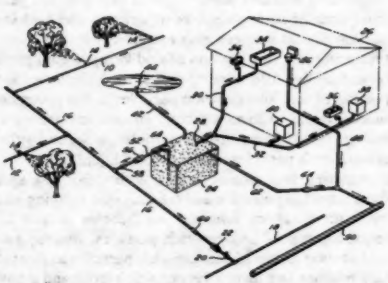
WATER RECLAMATION SYSTEM FOR LANDSCAPE IRRIGATION

Marc DeCoster, 759 Tawney Ct., Oceanside, Calif. 92056, and Jay L. Hoffman, 751 Tawney Ct., Oceanside, Calif. 92057

Filed May 16, 1991, Ser. No. 701,489

Int. Cl.[5] E02B *13/02*

U.S. Cl. 210—117 **7 Claims**



1. A water reclamation system for use with a landscape irrigation system, comprising:

a storage reservoir located adjacent a domestic dwelling;

a first reservoir inlet conduit for inputing gray water from sources within said dwelling into said reservoir;

a second reservoir inlet conduit for inputing gray water from sources outside of said dwelling into said reservoir;

at least one drain disposed within a lawn of said dwelling and connected to said second inlet conduit for inputing ground water into said reservoir;

a first reservoir outlet conduit for placing said reservoir in fluid communication with said landscape irrigation system;

a second reservoir outlet conduit for providing an overflow drain line from said reservoir to a sewage line;

a pump positioned within said first outlet conduit for pumping water from within said reservoir into said irrigation system; and

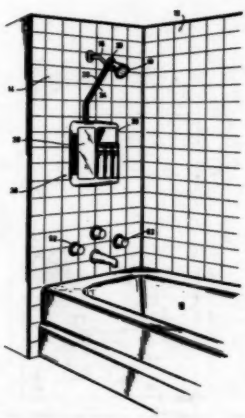
a filter positioned within said first outlet conduit for filtering water pumped from said reservoir before the water is inputed into said irrigation system.

5,192,427

SHOWER FILTERS AND ACCESSORIES

Douglas R. Eger, 97 Lakeview Village, Montgomery, Tex. 77356; Douglas W. Smith, and Robert E. Dawson, both of Ridgefield, Conn., assignors to Douglas R. Eger, Montgomery, Tex.

Filed May 24, 1990, Ser. No. 528,149
Int. Cl.[5] B01D *27/08*
U.S. Cl. 210—133 **49 Claims**



1. A water filter assembly for use with a shower bath, comprising:

housing means having inlet and outlet means;

filter means mounted in the housing means in communication with the inlet and outlet means so that water flowing into the housing means through the inlet means will pass through the filter means and out the outlet means;

a bypass adapter having:

means defining a source port opening through a rear surface of the bypass adapter, the means being adapted for connection to a water source pipe to communicate the water source pipe with the source port,

means defining upstream and downstream bypass parts opening through a lower surface of the bypass adapter, the means defining the bypass ports being adapted for connection to the housing means to communicate the inlet and outlet means, respectively, with the upstream and downstream bypass ports,

means defining a head port opening through a front surface of the bypass adapter, the means defining the head port being adapted for connection to a shower head to communicate the head port with the interior of the shower head,

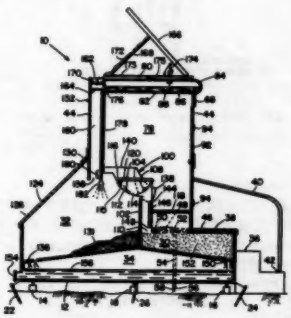
and the adapter having internal passage means communicating the source port with the upstream port and communicating the downstream port with the head port.

5,192,428

PORTABLE SYSTEM FOR TREATING HUMAN WASTE

Carl R. Lindstrom, Cambridge, Mass., assignor to Clivus Multrum, Inc., Lawrence, Mass.

Filed Apr. 18, 1991, Ser. No. 687,146
Int. Cl.[5] C02F *3/02*
U.S. Cl. 210—143 **8 Claims**



8. In a system for composting feces and for collecting urine by collecting feces and urine in a treatment vessel which has a urine treatment retainer, a composting retainer and means for exposing the collected feces to sufficient air and moisture in said composting retainer to allow feces to compost:

the improvement comprising a substrate supporting aerobic nitrifying bacteria disposed in the urine-treatment retainer which is at least partially partitioned from the composting retainer, means for passing urine through the urine-treatment retainer, whereby when urine is passed through the substrate, the substrate thereby forms liquid product, and means for adding water to said composting retainer and controlling means which controls the amount of water to be added to allow composting of feces at an adequate rate, thereby preventing the feces from becoming over-dried or over-wet.

5,192,429

SELF-CLEANING FILTER

Bernard R. Bader, 6802 Bristol Way, Yakima, Wash. 98908

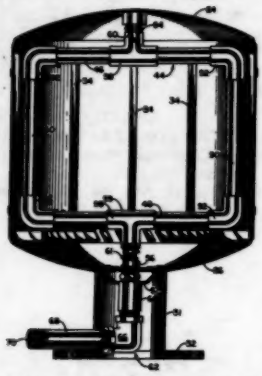
Filed Jul. 1, 1991, Ser. No. 724,190
Int. Cl.[5] B01D *29/15*
U.S. Cl. 210—170 **9 Claims**

1. A self-cleaning filter, said self-cleaning filter comprising:

an enclosed screen assembly, said enclosed screen assembly being substantially hollow, attachable to an inlet for drawing fluid from a fluid source and having an exposed, substantially fluid permeable screen to pass fluid from said fluid source to said inlet;

a cleaning system, said cleaning system rotatable mounted to and located substantially within said enclosed screen assembly and said cleaning system further having the capacity to deliver a plurality of outwardly directed cleaning fluid streams; and

a propulsion system, said propulsion system located proximate said cleaning system so that said propulsion system



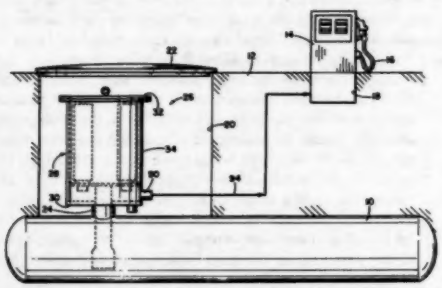
causes said cleaning system to rotate relative to said enclosed screen assembly.

5,192,430

SYSTEM FOR DISPENSING LIQUID FUEL TO A MOTOR VEHICLE FUELING STATION

Kirby S. Mohr, Tulsa County, Okla., assignor to Facet Quantek, Inc., Tulsa, Okla.

Filed Jun. 17, 1991, Ser. No. 716,302
Int. Cl.[5] B01D *35/01, 35/027*
U.S. Cl. 210—172 **9 Claims**



1. A system for dispensing liquid fuel to a motor vehicle fueling station mounted on the earth's surface, the fueling station having piping connected thereto for receiving liquid fuel, the system comprising:

an underground sump positioned adjacent the fueling station;

an underground storage tank buried in the earth below said underground sump and having a vertical pump riser pipe extending upwardly therefrom and into said underground sump;

an upright vessel positioned with the underground sump, the vessel having a bottom, a sidewall, an open top and having a partition therein spaced from the bottom dividing the vessel interior into an upper zone and a lower zone, and the vessel having aligned inlet openings in the bottom and the partition and having an outlet opening communicating with the vessel lower zone, the bottom inlet opening being sealably attached to said storage tank vertical pump riser pipe providing closed communication between the underground storage tank and the vessel, the partition having at least one adapter opening therethrough spaced from said inlet opening in the partition, the vessel being supported by said pump riser pipe within said underground sump, the vessel outlet opening being connected to the fueling station piping;

a vertical fuel outlet pipe received within said vessel bottom inlet opening and telescopically received in said pump riser pipe, said fuel outlet pipe having a lower end extending within said fuel storage tank and an upper end sealably secured to said inlet opening in the partition;

means sealing the exterior of said fuel outlet pipe to said vessel bottom inlet opening;

at least one filter cartridge removably positioned within said vessel upper zone having a filter fuel outlet in closed communication with said at least one adapter opening in said partition; and

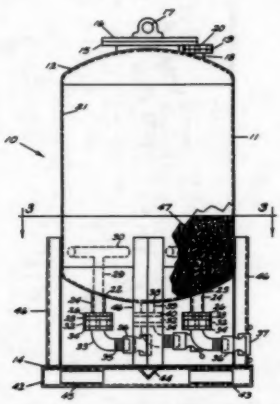
a removable lid attachable to and for sealably closing said vessel top, fuel flowing from the storage tank passing upwardly through said fuel outlet pipe and into said vessel upper zone, through said at least one filter cartridge into said vessel lower zone, out through said vessel outlet opening and through the fueling station piping to the motor vehicle fueling station.

5,192,431

FORKLIFT MANIPULABLE, LINED, DISSOLVER FOR TRANSPORTING AND FEEDING CHEMICALS FOR WATER PURIFICATION

Norman A. Holmes, 2906 Little Bear, Kingwood, Tex. 77339

Filed May 23, 1991, Ser. No. 704,444
Int. Cl.[5] B01D *15/00*
U.S. Cl. 210—198.1 **2 Claims**



1. A portable dissolver for transporting water-purifying chemicals and dissolving and introducing them into a water supply comprising

a cylindrical tank with semispherical top and bottom members,

a metal transportable skid positioned to support said tank,

said metal skid being rectangular in shape and constructed for transport by a fork-lift,

a chemical-resistant, plastic lining on substantially the entire inner surfaces of said tank to prevent chemical attack thereto,

pellets or granules of water-purifying chemicals substantially filling said tank,

an inlet opening and an outlet opening on the bottom of said tank for connection to a water supply,

said bottom inlet opening comprising a first standpipe with a header at one end thereof comprising a closed end tube with holes for facilitating water flow therethrough,

a valve controlling flow through said inlet opening,

said bottom outlet opening comprising a standpipe with a

header at one end thereof comprising a closed end tube with holes for facilitating water flow therethrough,

said inlet and outlet headers being positioned on opposite sides of said tank, parallel to each other and at substantially the same level in said tank a predetermined distance above the bottom,

a valve controlling flow through said outlet opening,

said valves controlling water flow through the contents of said tank to determine the rate of dissolution of water-purifying chemicals and rate of introduction of said chemicals into said water supply,

said tank having a flanged top opening with removable cover for introduction of said water-purifying chemicals,

a top tank inlet for introduction of water for flushing and cleaning said tank, and

a bottom tank outlet for removal of water used in flushing and cleaning said tank.

5,192,432

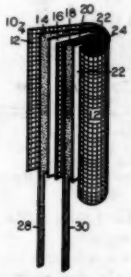
FLOW-THROUGH CAPACITOR

Marc D. Andelman, 6 Nadine Rd., Framingham, Mass. 01701

Continuation of Ser. No. 512,970, Apr. 23, 1990, abandoned. This application Nov. 15, 1991, Ser. No. 792,902

Int. Cl.[5] B01D *15/08*

U.S. Cl. 210—198.2 **25 Claims**



16. A flow-through capacitor adapted for use in a controlled charge chromatographic column for the purification of liquids, which capacitor comprises:

a) a plurality of spirally wound layers wound about a central, hollow, perforated plastic tube from inside to outside, with each end of the layers sealed, the layer composed of a first spacer layer, a first backing layer, a first high surface layer, a second spacer layer, a second backing layer and a second high surface layer;

b) the first and second spacer layers comprises a porous, electrically non-conductive layer to permit the flow of liquid therethrough, the first and second backing layer comprising an electrically conductive graphite foil with pin holes therein, and the first and second surface area layers comprising a porous, activated carbon woven fiber cloth to act as the stationary phase in a chromatographic column; and

c) a cathode and an anode lead, each integrally formed from and extending electrically respectively to the first and second backing layers and adapted to be connected to a DC power source to provide for the first and second backing layers to become the anode and cathode of the flow-through capacitor and separate and opposite charges on the backing layer.

5,192,433

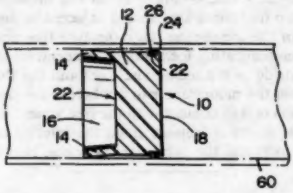
SLURRY COMPRESSOR, APPARATUS FOR GUIDING COMPRESSOR, AND METHOD FOR PACKING SLURRY IN COLUMN

Yehuda Shalon, St. Louis, Mo., assignor to MODcol Corporation, St. Louis, Mo.

Continuation of Ser. No. 501,122, Mar. 29, 1990, abandoned. This application Apr. 17, 1992, Ser. No. 870,217

Int. Cl.[5] B01D *15/08*

U.S. Cl. 210—198.2 **10 Claims**



1. A slurry compressor for use in packing a chromatographic column adapted to contain a bed of particles comprising a slurry, said compressor comprising a shaped member having an inner portion and an outer portion, said inner portion comprising a solid segment that includes a generally planar surface that is adapted to contact slurry, said outer portion comprising a hollowed interior defined by a wall structure sized for contacting a chromatographic column wall and extending from the solid segment forming the inner portion, said inner portion including an annular groove positioned intermediate said generally planar surface and said outer portion, said groove comprising means for receiving resilient means adapted to seal an inner face of a column wall and said compressor when said compressor is in a chromatography column, and further including resilient means for sealing a chromatography column positioned within said group.

5,192,434

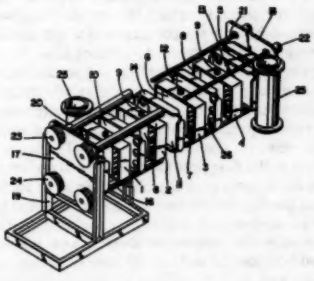
MEMBRANE FILTRATION APPARATUS AND METHOD OF MAKING A MEMBRANE FILTRATION UNIT

Jens K. Moller, Maribo, Denmark, assignor to Dow Danmark A/S, Copenhagen, Denmark

Continuation of Ser. No. 476,463, Jun. 7, 1990, abandoned. This application May 13, 1992, Ser. No. 882,651

Int. Cl.[5] B01D *61/50, 63/08, 69/06*

U.S. Cl. 210—227 **14 Claims**



1. An apparatus comprising

I. a filtration unit comprising

A. a stack of rectangular membrane pairs, wherein two opposite edges of each pair are sealed and a third edge is bound in a cured binder such that a fluid tight seal is formed along such edge and along the entire third edge the interior between the membrane pairs is open, and the

fourth edge is sealed or bound in cured binder along the entire edge;

B. a permeate selection collection sealed about the edge of the stack of membrane pairs bound in curable binder, in contact with the open edge of the stack of membrane pairs and in communication with the space between each membrane pair;

C. two end plates adjacent to the two ends of the membrane stack, and

D. a bottom plate which interconnects the two end plates at the underside of the membrane stack;

II. a cassette frame arranged about the filtration unit such that two free zones are created adjacent to the two sealed sides of the membrane stack the two free zones adapted for communicating feed and/or concentrate streams with the outside of the membrane pairs and the flow passages between the membrane pairs; wherein the portion of the filtration unit in contact with the free zones created by the cassette frame is isolated from the interior of the membrane pairs and the permeate collection chamber.

5,192,435

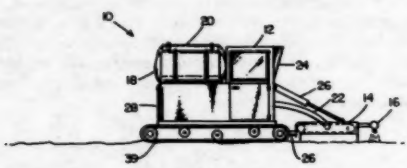
SELF-CLEANING VACUUM HEAD FOR RECOVERING OIL FROM BEACHES AND THE LIKE

Allen C. Francisco, Jr., Bellevue, Wash., assignor to Fraser Environmental Systems, Inc., Seattle, Wash.

Continuation of Ser. No. 519,284, May 4, 1990, Pat. No. 5,076,919. This application Jun. 7, 1991, Ser. No. 712,192

Int. Cl.[5] B01D *35/02*

U.S. Cl. 210—241 **16 Claims**



9. A vacuum pick up device constructed and arranged for removing fluid media from selected particulate matter comprising:

a first substantially planar surface for contacting particulate matter, the first surface having an elongated slot aperture for passage of fluid media therethrough in a transverse direction, the slot having a predetermined length and width defining a slot axis;

a second substantially planar surface adjacent to the first surface, the second surface having an elongated area of perforation having a predetermined width and defining a perforation axis transverse to the slot axis;

moving means for moving the first and second surfaces with respect to one another in a moving direction which is transverse to both the slot axis and the perforation axis and substantially parallel to the first and second surfaces from a first relative position to a second relative position, wherein at the first position the slot and the area of perforation are at least partially aligned so as to form an intersection having a maximum dimension selected to substantially be smaller than a smallest cross sectional dimension of the selected particulate matter, and wherein at the second position the slot and the area of perforation are not aligned; and

vacuum means for establishing a pressure differential across the first and second surfaces so that particulate matter is drawn against the first surface and tends to roll in the intersection as the surfaces move with respect to one another so as to promote thorough separation of the fluid media from the particulate matter until the slot and area of perforation are no longer coincident so as to release the particulate matter from the first surface during operation of the device.

16. The device of claim 9, including a vehicle for carrying the device in a suspended manner over the fluid media to be treated and steam jets mounted forwardly of the device to decrease the viscosity of the fluid media to be removed from the particulate matter.

5,192,436

TAP WATER PURIFIER TO BE DIRECTLY COUPLED TO FAUCET PIPE

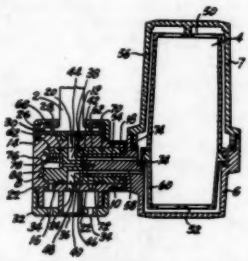
Tsutomu Sasaki, 30-21, Otsuhata-cho, Misagagi, Yamashina-ku, Kyoto, and Satoshi Sasaki, Kyoto, both of Japan, assignors to Tsutomi Sasaki, Kyoto, Japan

Filed Nov. 18, 1991, Ser. No. 793,865

Claims priority, application Japan, Nov. 21, 1990, 2-319096; Apr. 24, 1991, 3-122562

Int. Cl.[5] B01D *27/08*

U.S. Cl. 210—264 **8 Claims**



1. A tap water purifier to be directly coupled to a faucet pipe comprising:

a purifying barrel filled with a filter medium and having opposite opening ends;

a casing including a cylindrical bore formed therein and having tap water inlet port means, tap water outlet port means and purified water outlet port means formed therein, said tap water inlet port means and said purified water outlet port means opening to said cylindrical bore of the casing at an angular distance of 180° from each other in the same axial position;

a cylindrical valve body integral with said purifying barrel and inserted in said cylindrical bore of the casing for rotation about the longitudinal axis of the valve body;

first flow path means formed in said valve body and communicated with one opening end of said purifying barrel;

second flow path means formed in said valve body and communicated with the other opening end of said purifying barrel, said first and second flow path means opening to the peripheral surface of said valve body at an angular distance of 180° from each other in an axial position corresponding to the opening positions of said tap water inlet port means and said purified water outlet means; and

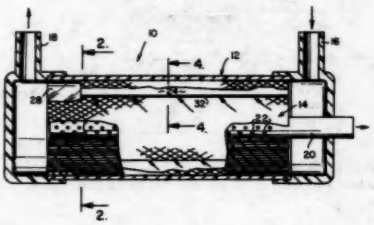
third flow path means formed in said valve body and communicated with said tap water outlet port means, said third flow path means opening to the peripheral surface of said valve body in an angular position between the opening positions of said first and second flow path means and in said axial position corresponding to the opening position of said tap water inlet port means.

5,192,437

SPIRAL FILTRATION MODULE WITH IMPROVED CLEANABILITY AND OPERATING EFFICIENCY

Jikuo Chang, Tyngsboro, and Robert G. Blanck, Stoneham, both of Mass., assignors to Koch Membrane Systems, Inc., Wilmington, Mass.

Filed Aug. 20, 1990, Ser. No. 570,138
Int. Cl.[5] B01D *61/18*
U.S. Cl. 210—321.83 **4 Claims**



1. A device for use in ultrafiltration of a liquid feed stream, said device comprising:

a housing including means for receiving said feed stream at one end thereof;

a filtration cartridge for separating said feed stream into concentrate and permeate,

said cartridge being disposed within said housing in spaced relationship to the latter to accommodate the flow of said feed stream around the periphery of and radially inward through at least a portion of the cartridge along its length;

means for maintaining said cartridge in spaced relationship to said housing without blocking liquid flow through said housing;

means coupled with said housing for accommodating withdrawal of permeate; and

potting means for sealing said cartridge to said housing at the end of the latter opposite said one end only, the other end of said housing being open to accommodate liquid flow into said housing in the direction of said one end, whereby when said feed stream enters said housing at said other end it flows between said cartridge and said housing and then enters said cartridge but is precluded from by-passing said cartridge by said potting means.

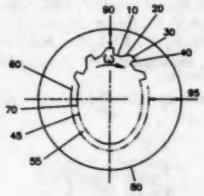
5,192,438

ROTATING ELEMENT FOR SCREENING APPARATUS WITH A CONTOUR SURFACE PRODUCED BY A PLURALITY OF PROTRUSIONS IN THE DIRECTION OF THE AXIAL LENGTH OF THE ROTOR

Frey Frejborg, Glen Falls, N.Y., assignor to A.Ahlstrom Corporation, Noormarkku, Finland

Continuation-in-part of Ser. No. 252,810, Oct. 3, 1988, Pat. No. 4,950,402, which is a continuation-in-part of Ser. No. 41,241, Apr. 22, 1987, Pat. No. 4,776,957, said Ser. No. 61,594, is a continuation-in-part of Ser. No. 738,743, May 29, 1985, Pat. No. 4,676,903, which is a continuation-in-part of Ser. No. 472,742, Mar. 7, 1983, Pat. No. 4,529,520. This application Aug. 14, 1990, Ser. No. 567,258
The portion of the term of this patent subsequent to Aug. 21, 2007, has been disclaimed.
Int. Cl.[5] B01D *29/62;* B07B *1/20*
U.S. Cl. 210—413 **29 Claims**

1. In an apparatus for screening pulp which comprises a vessel, a screen cylinder having an envelope surface and a contour surface within the vessel, a rotor moving in the vicinity of the screen cylinder at a predetermined speed on an axis of rotation, said rotor having an axial length, an inlet for the unscreened pulp, a first outlet for the accept screened pulp in said vessel and a second outlet for the reject, said first and second outlets being in operative communication with said screen cylinder, said rotor having a non-cylindrical shape, the improvement which comprises said rotor having a contoured surface including a plurality of spaced protrusions disposed about the periphery of the rotor, each of said protrusions being shorter than the axial length of said rotor, each protrusion having a side plane essentially perpendicular to the rotor surface which is the leading surface, two edge surfaces, an upper



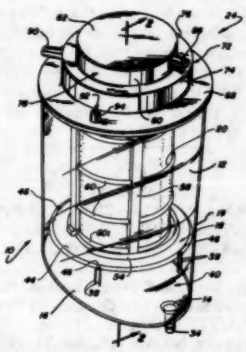
plane parallel to the rotor surface and an inclined plane, said inclined plane forming an angle between 5°–60° with said rotor surface whereby a lower frequency pumping action, high frequency high intensity positive pulses are generated with additional high intensity axial shears with improved screening at a pulp concentration up to 6%.

5,192,439

BLOOD COLLECTION RESERVOIR AND FILTER DEVICE

Gary L. Roth, Elizabeth, and William D. Zillmann, Broomfield, both of Colo., assignors to Electromedics, Inc., Englewood, Colo.

Filed Feb. 3, 1992, Ser. No. 829,691
Int. Cl.[5] B01D *29/11, 29/27*
U.S. Cl. 210—485 **14 Claims**



1. A device for filtering and storing blood comprising in combination, a tubular housing having a vertical central axis, a continuous side wall extending substantially parallel to said axis, a top wall and a bottom wall, a tubular vertically extending cage supported within said housing in spaced relationship with said side wall, an outwardly flared and downwardly tapered ring operatively connected to a lower portion of said cage, said ring having an outer edge closely spaced from said side wall, a cylindrical filter medium confined to said cage and defining a chamber within said housing, an inlet to the interior of said housing in communication with said chamber for admitting blood to the chamber and an outlet from the bottom of said housing through which blood can be removed from the housing whereby blood entering said chamber must pass through said filter medium and onto said ring before flowing across the ring and cascading to an internal surface of the side

wall of the housing where it flows downwardly along said side wall for removal through said outlet.

5,192,440

HOLLOW CELLULOSE DIALYSIS FIBERS

Gunter von Sengbusch, Wuppertal, Fed. Rep. of Germany, assignor to Akzo N.V., Netherlands

Filed Nov. 27, 1991, Ser. No. 798,897

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1990, 4038247

Int. Cl.[5] B01D *71/10, 71/12*

U.S. Cl. 210—500.29 **6 Claims**

1. A cellulose dialysis membrane in the form of a hollow fiber formed from cellulose-cuoxam solutions, with an internal cavity formed by a liquid or a gas and with a UFR of at least 4 ml/m^2-h-mm Hg, wherein:

hydrogel components of the cellulose are distributed in cells with an average free path length, as determined by a freeze-etching replica method after swelling of the cellulose membrane with water, of 3–10 mm in the membrane wall in a log-normal distribution, the average free path length being the distance between the cells;

more than 65% of hydrogel cell interfaces in the membrane have a form factor between 1.0 and 5.0; and

said membrane having properties for enabling its UFR following storage for more than ten days in a humid atmosphere at 20° C. and 100% relative humidity to be maintained at more than 50% of the value obtained immediately after drying or after storage in a dry environment.

5,192,441

PROCESS AND INSTALLATION FOR BIOLOGICAL TREATMENT, E.G. BY NITRIFICATION AND/OR DENITRIFICATION, OF AN EFFLUENT INCLUDING NITRATED POLLUTION

Jacques Sibony, Paris, and Gilbert Desbos, Maisons-Laffitte, both of France, assignors to Omnium de Traitements et de Valorisation (OTV), Courbevoie, France

Continuation of Ser. No. 478,865, Feb. 12, 1990, abandoned. This application Sep. 11, 1991, Ser. No. 759,146

Claims priority, application France, Feb. 14, 1989, 89 01886

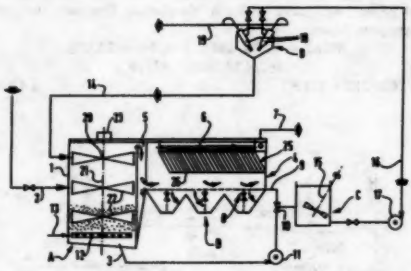
Int. Cl.[5] C02F *3/12, 3/30*

U.S. Cl. 210—603 **40 Claims**

1. A method for biological treatment of sewage effluent water containing nitrogen pollution, comprising:

bringing an incident flow of said sewage into a mixing zone with at least one compartment and effecting, by high turbulent mechanical agitation within said compartment, homogeneous suspension of a substantially unconsumable and insoluble granular material in a concentration of at least about 5 g/l, loaded with biomass in a concentration of less than 1 g/liter, in said sewage, and maintaining a generally constant mass concentration in said homogeneous suspension;

circulating said sewage and said granular material in suspension to a separation zone and decanting clarified water from the granular material loaded with active biomass using laminar flow decantation; and



effecting forced and direct recycling of at least 75% of the active biomass fixed to said granular material to the mixing zone.

5,192,442

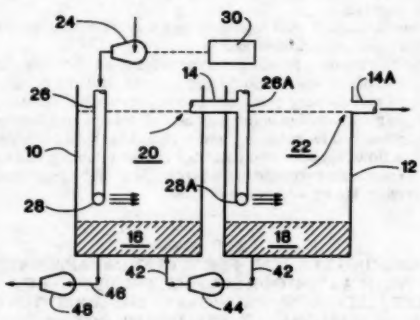
MULTIPLE ZONE BATCH TREATMENT PROCESS

John Piccirillo, and John A. Meidl, both of Weston, Wis., assignors to Zimpro Passavant Environmental Systems, Inc., Rothschild, Wis.

Filed Dec. 2, 1991, Ser. No. 801,211

Int. Cl.[5] C02F *3/30*

U.S. Cl. 210—605 **36 Claims**



1. A process for operating a multiple zone batch treatment system for wastewater, said system comprising at least a first batch treatment zone and a last batch treatment zone, influent wastewater treated by sequential passage into and from said first zone, through any intervening zones, into and from said last zone, each treatment zone fitted with means to produce plug flow of liquid through that zone, the process comprising the steps;

a) mixing a biomass solids mixture with wastewater within each treatment zone;

b) settling each zone by ceasing mixing to produce a settled solids phase and a clarified liquid phase within each treatment zone;

c) transferring wastewater between adjacent zones in said system by adding a predetermined volume of influent liquid in a plug flow mode to at least one of said treatment zones, said added volume of influent liquid displacing a like volume of clarified liquid phase in a plug flow mode from that treatment zone to a following treatment zone; and

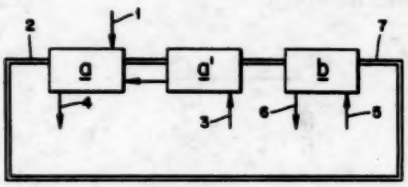
d) repeating steps a through c.

5,192,443

SEPARATION OF RARE EARTH VALUES BY LIQUID/LIQUID EXTRACTION

Thierry Delloye, Villeparisis, and Jean-Louis Sabot, Maisons Laffitte, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Continuation of Ser. No. 172,423, Mar. 23, 1988, abandoned. This application Feb. 21, 1991, Ser. No. 657,957
Claims priority, application France, Mar. 23, 1987, 87 03959
Int. Cl.[5] B01D *11/04*
U.S. Cl. 210—634 36 Claims



1. A process for the separation of rare earth values from an aqueous solution of the nitrates of at least two rare earth elements, comprising liquid/liquid extracting such aqueous nitrate solution with a liquid organic phase capable of containing high concentrations of the rare earth values which comprises a mixture of different organophosphorus extractants having the formulae (I) and (I'):

(I)

(I')

wherein formula (I), R_1, R_2 and R_3, which may be identical or different, are each a hydrogen atom or a substituted or unsubstituted linear or branched chain, or cyclic, saturated or unsaturated hydrocarbon radical, with the proviso that the sum of the carbon atoms of the radicals R_1, R_2 and R_3 is equal to at least 12 carbon atoms; and wherein formula (I'), R_4, R_5 and R_6, which may be identical or different, are each a hydrogen atom or a substituted or unsubstituted linear or branched chain, or cyclic, saturated or unsaturated hydrocarbon radical, also with the proviso that the sum of the number of carbon atoms of the radicals R_4, R_5 and R_6 is equal to at least 12 carbon atoms.

5,192,444

SEPARATING WITH AN AGENT COMPRISING AN ALIPHATIC ESTER OF A POLYSACCHARIDE

Tohru Shibata; Hajime Namikoshi, and Ichiro Okamoto, all of Himeji, Japan, assignors to Daicel Chemical Industries, Ltd., Sakai, Japan

Division of Ser. No. 640,079, Jan. 11, 1991, Pat. No. 5,089,138, which is a division of Ser. No. 430,736, Nov. 2, 1989, Pat. No. 5,041,226, which is a division of Ser. No. 225,066, Jul. 27, 1988, Pat. No. 4,892,659, which is a division of Ser. No. 18,814, Feb. 18, 1987, Pat. No. 4,786,415, which is a continuation of Ser. No. 716,790, Mar. 27, 1985, abandoned. This application Dec. 18, 1991, Ser. No. 809,680
Claims priority, application Japan, Apr. 2, 1984, 59-65323
Int. Cl.[5] B01D *15/08*
U.S. Cl. 210—635 9 Claims

5. A method for chromatographically separating an optical isomer from a racemic mixture thereof which comprises contacting said mixture, under liquid chromatographic separation conditions, with a chromatographic separation material consisting essentially of inorganic carrier particles having a particle size of from 1 μm to 10 mm and coated with from 1 to 100% by weight of resolving agent, based on the weight of said carrier particles, said resolving agent consisting essentially of cellulose triscyclopropanecarboxylate.

5,192,445

MEMBRANE SUITABLE FOR THE DEHYDRATION OF ORGANIC OXYGENATES

Craig R. Bartels, Wappingers Falls, N.Y., assignor to Texaco, Inc., White Plains, N.Y.

Filed Oct. 11, 1990, Ser. No. 597,966
The portion of the term of this patent subsequent to Feb. 12, 2008, has been disclaimed.
Int. Cl.[5] B01D *61/36*
U.S. Cl. 210—640 11 Claims

11. The method of concentrating a charge aqueous solution of an organic oxygenate which comprises

maintaining a non-porous separating layer of a poly (vinyl pyridine) including a first non-porous membrane of a poly (vinyl pyridine) which has been formed by cross-linking, with an aliphatic polyhalide, a polymer of vinyl pyridine and, deposited thereon, a second non-porous membrane of a poly (vinyl pyridine) which has been formed by cross-linking, with an aliphatic polyhalide, a polymer of vinyl pyridine;

maintaining a pressure drop across said non-porous separating layer;

passing a charge aqueous solution of an organic oxygenate into contact with the high pressure side of said non-porous separating layer whereby at least a portion of said water in said charge aqueous solution and a lesser portion of organic oxygenate in said charge aqueous solution pass by pervaporation through said non-porous separating layer as a lean mixture containing more water and less organic oxygenate than are present in said charge aqueous solution and said charge aqueous solution is converted to a rich liquid containing less water and more organic oxygenate than are present in said charge aqueous solution;

recovering as permeate from the low pressure side of said non-porous separating layer said lean mixture containing more water and less organic oxygenate than are present in said charge aqueous solution, said lean mixture being recovered in vapor phase at a pressure below the vapor pressure thereof; and

recovering as retentate from the high pressure side of said non-porous separating layer said rich liquid containing a lower water content and a higher organic oxygenate content than are present in said charge aqueous solution.

5,192,446

CATION EXCHANGE RESINS HAVING AN ENHANCED CAPACITY FOR IRON OXIDES

Eli Salem, Deal, and Robert Kunin, Trenton, both of N.J., assignors to The Graver Company, Union, N.J.

Filed Jan. 24, 1992, Ser. No. 824,998
Int. Cl.[5] C02F *1/42*
U.S. Cl. 210—685 15 Claims

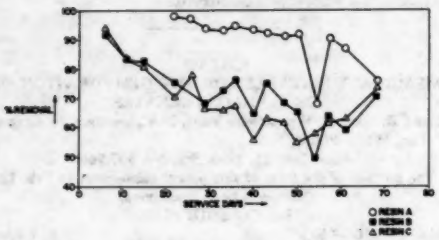
1. A method for removing transition metal oxides and soluble cationic species from condensate comprising:

hydrating a strongly acidic dual morphology cation exchange resin in a microreticular, desiccated morphology to convert said dual morphology cation exchange resin to a macroreticular, hydrated morphology;

said dual morphology cation exchange resin being gelular in a dry state and substantially macroreticular in a hydrated state; and

passing an aqueous stream containing condensate which has a first concentration of a transition metal oxide into a

separation zone that includes a first particulate bed constituted by said dual morphology cation exchange resin in a



macroreticular, hydrated morphology and in a hydrogen form.

5,192,447

USE OF MOLYBDATE AS A COOLING WATER CORROSION INHIBITOR AT HIGHER TEMPERATURES

Kenneth P. Fivizzani, Naperville, Ill., assignor to Nalco Chemical Company, Naperville, Ill.

Filed Jul. 9, 1991, Ser. No. 727,413

Int. Cl.[5] C23F 11/167; C02F 5/14

U.S. Cl. 210—697 **7 Claims**

1. A method of treating cooling water systems operating at temperatures in excess of 130° F. with a stabilizing agent which is an anionic polymer, a general corrosion and scale inhibitor comprising zinc, nickel or a combination thereof, orthophosphate, and a 2-phosphonobutane-1,2,4 tricarboxylic acid, in which the level of the general corrosion and scale inhibitor required to achieve a given level of corrosion inhibition in the absence of a localized corrosion inhibitor is reduced by at least one third by introducing a localized corrosion inhibitor chosen from the group consisting of water-soluble salts of molybdenum, vanadium, and tungsten.

5,192,448

PROCESS FOR BREAKING OIL-IN-WATER EMULSIONS

Thomas Augustin, Cologne, and Jörg Keldenich, Langenfeld, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 28, 1992, Ser. No. 843,655

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1991, 4107643

Int. Cl.[5] B01D 17/04

U.S. Cl. 210—708 **6 Claims**

1. A process for breaking an oil-in-water emulsion having a surfactant content of more than 0.1% weight, a salt content of less than 3.0% weight and an oil content of from 0.5% weight to 5.0% weight, comprising measuring the streaming current potential of the emulsion, determining the amount of demulsifier required to break said emulsion from said measurement and adding the determined amount of demulsifier to break said emulsion.

5,192,449

METHOD FOR DETACKIFYING OVERSPRAYED PAINT

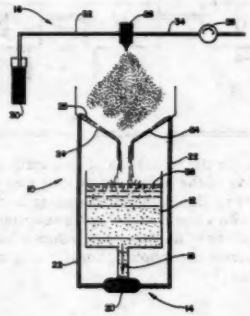
Shu-Jen W. Huang, Naperville; Chandrashekar S. Shetty, Lisle; Nang T. Bui, Aurora; Yvonne O. Dunn, Naperville; Uma Bhattacharyya, and Bhupati R. Bhattacharyya, both of Downers Grove, all of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Division of Ser. No. 681,751, Apr. 8, 1991, Pat. No. 5,116,514. This application Apr. 17, 1992, Ser. No. 870,058

The portion of the term of this patent subsequent to May 26, 2009, has been disclaimed.

Int. Cl.[5] C02F 1/56

U.S. Cl. 210—712 **13 Claims**



1. A method for the detackification of oversprayed paint in a paint spray operation wherein said oversprayed paint comes into contact with water of a waste water system, comprising:

dosing said water of said waste water system with a composition comprising a polymer and aluminum sulfate,

said polymer consisting essentially of from about 10 to about 50 mole percent of cationic mer units of monoethylenically unsaturated monomer, selected from dimethylaminoethylmethacrylate methyl chloride quaternary ammonium salt, dimethylaminoethylmethacrylate methyl sulfate quaternary ammonium salt, and acrylamidopropyltrimethyl ammonium chloride, and from about 50 to about 90 mole percent of (meth)acrylamide mer units,

said polymer having an intrinsic viscosity of from about 1.2 to about 4.0,

said composition containing from about 0.2 to about 10.0 parts by weight of aluminum sulfate as the octadecahydrate for each part by weight of said polymer,

wherein said composition is present in said water of said waste water system in sufficient amount to detackify oversprayed paint when said oversprayed paint comes into contact with said water.

5,192,450

ACOUSTOPHORESIS SEPARATION METHOD

Joseph S. Heyman, Williamsburg, Va., assignor to The United States of America as represented by the Administrator of the United States National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 628,062, Dec. 17, 1990, Pat. No. 5,147,562. This application Jun. 17, 1992, Ser. No. 901,627

Int. Cl.[5] B01D 17/06

U.S. Cl. 210—748 **1 Claim**

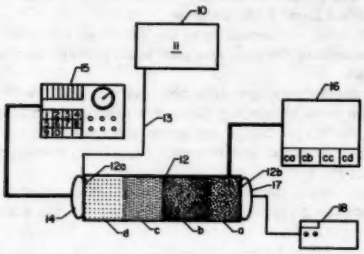
1. A method for separation of particulates in a liquid medium comprising the steps of:

filling a sample container with the liquid medium containing various sizes of particulates to be separated;

applying an acoustic wave having a particular frequency to the liquid medium in said sample container, whereby larger particulates are separated;

removing the larger separated particulates from the sample container;

increasing the frequency of the acoustic wave to separate smaller particulates; and



removing the smaller separated particulates from the sample container.

5,192,451

METHOD FOR CONTROLLING ZEBRA MUSSELS IN SHIP BALLAST TANKS

Patrick H. Gill, Zelienople, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.

Filed May 6, 1991, Ser. No. 696,439

The portion of the term of this patent subsequent to May 14, 2008, has been disclaimed.

Int. Cl.[5] C02F *1/50*

U.S. Cl. 210—755 **9 Claims**

1. A method for controlling the growth of zebra mussels in ballast water which contains zebra mussels or which is prone to the growth of zebra mussels comprising adding to said ballast water an effective amount of a water soluble dialkyl diallyl quaternary ammonium polymer.

5,192,452

CATALYST FOR WATER TREATMENT

Kiichiro Mitsui, Akashi; Tooru Ishii, Himeji; Sadao Terui, Hyogo; Kunio Sano, Ako, and Akira Inoue, Hirakata, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo, Co., Ltd., Osaka, Japan

Continuation of Ser. No. 540,140, Jun. 19, 1990, abandoned, which is a division of Ser. No. 378,990, Jul. 12, 1989, abandoned. This application Oct. 24, 1991, Ser. No. 782,787

Claims priority, application Japan, Jul. 12, 1988, 63-171824; Sep. 29, 1988, 1-242380

Int. Cl.[5] C02F *1/78*

U.S. Cl. 210—760 **5 Claims**

1. A method for treating water which comprises causing the water under treatment to contact a catalyst thereby deodorizing, sterilizing, and decoloring said water by the action of ozone or to decompose the remove ozone dissolved in said water, wherein said catalyst comprises a first catalyst component formed of the oxide of at least one metal selected from the group consisting of titanium, silicon, and zirconium and a second catalyst component formed of at least one metal selected from the group consisting of manganese, iron, cobalt, nickel, cerium, tungsten, copper, silver, gold, platinum, palladium, rhodium, ruthenium, and iridium or a sparingly water-soluble compound of said metal, wherein manganese, iron, cobalt, nickel, cerium, tungsten, copper, and silver are used in said second catalyst component only as oxide or sulfide, and gold, platinum, palladium, rhodium, ruthenium and iridium are used in said second catalyst component only as metal, said catalyst comprising in the range of 70 to 99.99% by weight of said first catalyst component and in the range of 30 to 0.01% by weight of said second catalyst component, provided that the sum of the two catalyst components is 100%, and wherein said treatment is carried out at 0° to 60° C.

5,192,453

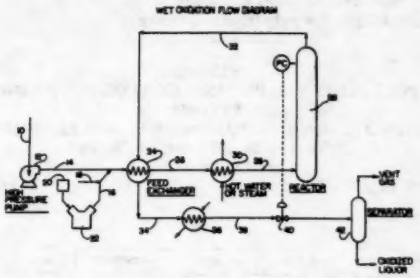
WET OXIDATION PROCESS FOR ACN WASTE STREAMS

Kenneth P. Keckler, Broadview Heights, Ohio; Bruce L. Brandenburg, Wausau, Wis.; Joseph A. Momont, Mosinee, Wis., and Richard W. Lehmann, Wausau, Wis., assignors to The Standard Oil Company, Cleveland, Ohio

Filed Jan. 6, 1992, Ser. No. 817,172

Int. Cl.[5] C02F *1/72, 1/74*

U.S. Cl. 210—761 **9 Claims**



1. A process for noncatalytic wet oxidation of aqueous ammonium sulfate waste stream obtained from an acrylonitrile production plant containing organic impurities, comprising the steps:

a) introducing oxygen into said aqueous waste stream in an amount in excess of the stoichiometric amount required for complete oxidation of the organic impurities present in the stream; and

b) heating said aqueous waste stream to a temperature of about 315° C. to about 370° C., and a pressure of about 1550 psig to about 4500 psig for a time sufficient to enable said oxygen present in said waste stream to react with said organic impurities to produce N_2, CO_2, and H_2O while maintaining said oxygen gas in said aqueous waste stream at an excess of said stoichiometric amount.

5,192,454

METHOD FOR TREATING FIBER SUSPENSION

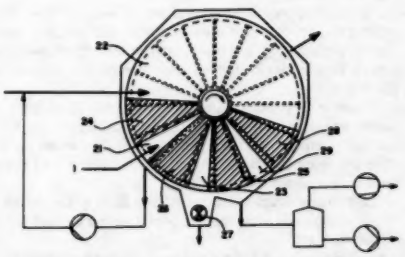
Pasi Immonen, and Ramio Kohonen, both of Savonlinna, Finland, assignors to A. Ahlstrom Corporation, Noormarkku, Finland

Division of Ser. No. 544,032, Jun. 26, 1990, Pat. No. 5,073,264, which is a continuation-in-part of Ser. No. 265,580, Nov. 1, 1988, abandoned. This application Sep. 16, 1991, Ser. No. 760,166

Claims priority, application Finland, Nov. 5, 1987, 874887

Int. Cl.[5] B01D *24/28*

U.S. Cl. 210—780 **10 Claims**



1. A method of treating a fiber suspension in a disc type pulp treatment apparatus comprising a pressure-proof casing having inlet means for said fiber suspension and discharge means for treated suspension and filtrate, a shaft rotating inside the casing

and a plurality of discs arranged on the shaft, said discs being formed of sectors having filter surfaces, between which surfaces there is a liquid compartment communicating with the liquid discharge means, the method comprising:

feeding the fiber suspension to be treated overpressurized into said casing;

filling said casing up with the fiber suspension;

carrying out the treatment in a closed airless space in three different treatment stages comprising a first treatment stage, a second treatment stage and a third treatment stage, the first treatment stage being further divided into a number of adjacent zones; and

discharging the pulp from said casing.

5,192,455

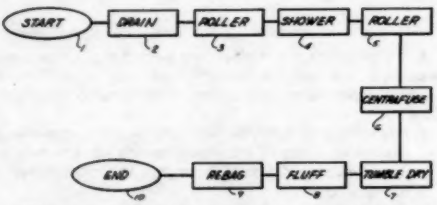
POLLUTION PAD RECONDITIONING/RECYCLING SYSTEM

Raymond C. Marcel, Jr., P.O. Box 89, Berwick, La. 70342

Filed Aug. 26, 1991, Ser. No. 749,892

Int. Cl.[5] B01D *21/26*

U.S. Cl. 210—787 **3 Claims**



1. A method of removing liquid hydrocarbons from pollution pads, restoring the pollution pads to a reusable state, comprising the following steps:

A. providing an apparatus for the removal of liquid hydrocarbons from pollution pads, comprising-

drain means for draining excess liquids from the pollution pads;

squeeze means associated with said drain means for squeezing out additional liquid from pollution pads;

a recirculating solvent shower having an upper portion and a medial layer for diluting and removing the liquid hydrocarbons from the pollution pads, said recirculating solvent shower further including—

at least one shower head forming the upper portion of said recirculating solvent shower, said shower head being configured for evenly dispersing a fluid solvent over the spray area;

a fluid permeable support for supporting a single layer of the pollution pads within the spray area of said shower head, said fluid permeable shower forming the medial layer of said recirculating solvent shower;

basin means for receiving a quantity of shower fluid, comprising the solvent and a percentage of the liquid hydrocarbon permeating said fluid permeable support, said basin means further including storage means for storing said fluid; and

circulation means for circulating the shower fluid from said basin means to said shower head, said circulation means further comprising a fluid pump and fluid conveying lines directed from said basin to said shower head; said apparatus further comprising;

a centrifuge extractor for extracting fluid absorbed by the pollution pads after having been treated by said solvent shower; and

a tumble dryer for drying residual solvent absorbed by the pollution pads;

B. draining said pollution pads in said drain means for a period of time so as to allow draining of any excess fluids from the pollution pads;

C. squeezing the pollution pads through said squeeze means so as to remove additional fluid from the pollution pads;

D. pacing the pollution pads in a single layer upon said fluid permeable support;

E. showering the pollution pads with a solvent, thereby diluting and substantially removing any remaining absorbed liquid hydrocarbons;

F. draining the solvent from the showered pollution pads;

G. squeezing the pollution pads again through said squeeze pads;

H. extracting the remaining absorbed solvent from the pollution pads by placing them in a centrifuge and spinning them in a centrifuge and spinning them at a rate of about seven hundred to a thousand (700–1000) revolutions per minute; and

I. tumbling in the pollution pads in a tumble dryer until any remaining solvent in the pollution pads has drained or evaporated.

5,192,456

APPARATUS FOR TREATING ACTIVATED SLUDGE AND METHOD OF CLEANING IT

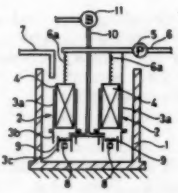
Hiroshi Ishida, Kodaira; Yutaka Yamada, Sakai; Kiyoshi Izumi, Takatsuki, and Masashi Moro, Kobe, all of Japan, assignors to Kubota Corporation, Osaka, Japan

Filed Mar. 4, 1992, Ser. No. 846,130

Claims priority, application Japan, Mar. 7, 1991, 3-40334; Aug. 30, 1991, 3-219066

Int. Cl.[5] B01D *24/46*; C02F *3/00*

U.S. Cl. 210—791 **10 Claims**



10. A method of cleaning the filter membrane modules in an apparatus for treating sewage sludge, said apparatus comprising:

a treating tank in which water to be treated is stored;

a plurality of filter membrane modules vertically arranged in spaced relation within the treating tank for separating said water to be treated into solid and liquid by passing the water therethrough, thereby to extract treated water; an agitating element disposed at a level below said filter membrane modules for creating upward flow currents;

a first casing member accommodating said filter membrane modules;

a second, vertically extending cylindrical casing member connected to a lower end of said first casing member and having a length of more than 500 mm but less than 2000 mm;

said filter membrane modules and said agitating element being accommodated in said casing members to form a filter unit; and

a plurality of said filter units are arranged in said treating tank;

wherein said filter membrane modules are plate filters; and the apparatus further comprising:

a frame member for housing said plate filter membrane modules; and

a plurality of guide grooves formed in said frame member for causing said plate filter membrane modules to be housed in said frame member and to be arranged at predetermined intervals;

wherein the method comprises:

lifting the filter membrane modules along the guide grooves;

stopping said lifting operation while holding the filter membrane modules in such condition that their lower ends are in engagement with the guide grooves, then supporting the filter membrane modules in suspension; and

cleaning by washing the filter membrane modules thus lifted and supported in suspension.

5,192,457

LUBRICATING OIL FOR USE UNDER RADIOACTIVE OR ENERGY IRRADIATION CONDITIONS

Jun Nishimura, Takahagi, Japan, assignor to Nok Kluber Company Ltd., Tokyo, Japan

Filed Mar. 9, 1992, Ser. No. 848,532

Int. Cl.[5] C10M *169/04, 125/10*

U.S. Cl. 252—25 **5 Claims**

1. A lubricating oil that is useful under radioactive or energy irradiation conditions which comprises a perfluoropolyether oil and a finely pulverized magnesium oxide distributed in the perfluoropolyether oil.

5,192,458

SILICONE GREASE COMPOSITION INCLUDING AN ORGANOMOLYBDENUM COMPOUND

Masahiko Minemura, Annaka; Takayuki Takahashi, Myougimachi, and Satoshi Kuwata, Annaka, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Oct. 12, 1990, Ser. No. 596,395

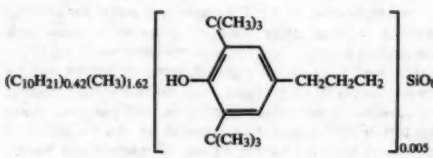
Claims priority, application Japan, Oct. 16, 1989, 1-269834

Int. Cl.[5] C10M *105/76, 135/18*

U.S. Cl. 252—42.7 **4 Claims**

1. A silicon grease composition comprising;

(A) 100 parts by weight of decyl(3,5-di-t-butyl-4-hydroxyphenylpropyl)methylsilicone having a viscosity of about 350 cSt at 25° C. and represented by the following formula:



(B) 1 to 60 parts by weight of a thickener; and

(C) 3 to 30 parts by weight of molybdenum dithiocarbamate.

5,192,459

STERILANT COMPOSITIONS

Elaine N. Tell, Fort Lee, N.J., and Preston L. Veltman, Severna Park, Md., assignors to Erika, Inc., Rockleigh, N.J.

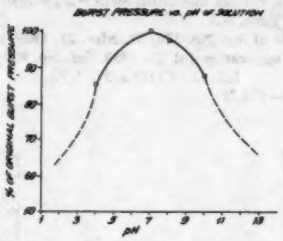
Continuation of Ser. No. 60,479, Jun. 11, 1987, abandoned, which is a continuation of Ser. No. 740,643, Jun. 3, 1985, Pat. No. 4,690,772. This application Apr. 14, 1989, Ser. No. 338,569

The portion of the term of this patent subsequent to Sep. 1, 2004, has been disclaimed.

Int. Cl.[5] C11D *3/48*

U.S. Cl. 252—106 **25 Claims**

1. A sterilant composition which when mixed with water comprises by weight, based on the total weight of the composition, an effective amount, in a range of from about 10 ppm to about 50,000 ppm of a water soluble oxidant sterilant, a water soluble acid in a range of from about 100 ppm to about 10,000 ppm and a water soluble buffer in a range of from about 1000 ppm to about 100,000 ppm sufficient to provide an isotonic solution with a pH of approximately 7.3, wherein none of the three components, the water soluble oxidant sterilant, the water soluble acid and the water soluble buffer, are the same,



and wherein the composition is biocompatible and suitable for use in a membrane-containing device.

5,192,460

SAFE ACIDIC HARD SURFACE CLEANER

Michel Thomas, Couthuin; Genevieve Blandiaux, Trooz, and Baudouin Valange, Gembloux, all of Belgium, assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 154,837, Feb. 10, 1988, abandoned. This application Jul. 31, 1989, Ser. No. 388,731

The portion of the term of this patent subsequent to Aug. 13, 2008, has been disclaimed.

Int. Cl.[5] C11D *1/12, 1/34, 1/66, 1/83*

U.S. Cl. 252—142 **20 Claims**

1. An acidic aqueous cleaner for bathtubs and other hard surfaces items which are acid resistant or are of zirconium white enamel, which cleaner is of a pH in the range of 1 to 4, and which removes lime scale, soap scum and greasy soil from surfaces of such items without damaging such surfaces, which comprises 3 to 14% of synthetic organic detergent(s) selected from the group consisting of anionic and nonionic detergents and mixtures thereof, 2 to 10% of organic acids(s) having 2 to 10 carbon atoms therein, which group of acids excludes oxalic and malonic acids, 0.01 to 2% of aminoalkylene phosphonic acid(s) and 0.05 to 5% of phosphoric acid, with the balance of the cleaner being an aqueous medium, with the proportions of the aminoalkylenephosphonic, phosphoric and organic acids being in the range of 1:1–2,000:10–4,000, in which proportions the combination of aminoalkylenephosphonic and phosphoric acids synergistically prevents damage to zirconium white enamel surfaces of items to be cleaned of lime scale, soap scum and greasy soil by the synthetic organic detergent and organic acid.

5,192,461

AQUEOUS DEGREASING SOLUTION HAVING HIGH FREE ALKALINITY

Lillie C. Tomaszewski, Dearborn, and James R. Crain, Northville, both of Mich., assignors to Enthone-OMI, Inc., West Haven, Conn.

Filed Aug. 23, 1991, Ser. No. 749,126

Int. Cl.[5] C11D *3/22, 7/08; C23G 1/06*

U.S. Cl. 252—156 **42 Claims**

1. A low solids, solvent free liquid aqueous degreasing concentrate composition having high free alkalinity comprising:

from about 20% to about 40% by weight of an alkali builder constituent;

from about 15% to about 25% by weight of a wetting agent mixture which will remain effective in high alkaline solutions comprising; from about 60% to about 85% of an anionic ar amphoteric wetting agent selected from the group consisting of anionic surfactants and amphoteric and anionic hydrotropes and water.

5,192,462

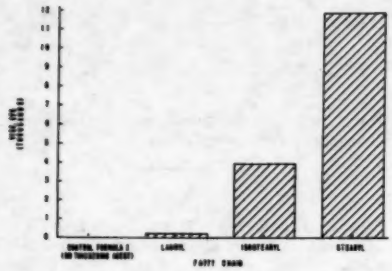
THICKENING AGENTS FOR TOPICAL PREPARATIONS

Guy J. Gloor, Tinton Falls; Kevin F. Gallagher, Middletown, and Abel G. Pereira, Belleville, all of N.J., assignors to Croda Inc., New York, N.Y.

Continuation of Ser. No. 326,298, Mar. 21, 1989, abandoned. This application Jul. 27, 1992, Ser. No. 920,011

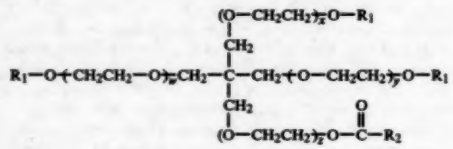
Int. Cl.[5] C11D *3/37, 1/90*

U.S. Cl. 252—174.21 **12 Claims**



1. A shampoo composition comprising:

from about 3% to about 51% by weight of a detergent selected from the group consisting of anionic surfactants, non-ionic surfactants, amphoteric surfactants and mixtures thereof, water, and from about 0.25 to about 6% by weight of a polyether ester thickening agent of the formula:



wherein:

R_1 is —H or

R_2 is a straight hydrocarbon chain having greater than 5 carbon atoms; and

(W+X+Y+Z) is greater than 60.

5,192,463

LOW TEMPERATURE, POLYPHENYLMETHANE-BASED DIELECTRIC COMPOSITIONS

Noelle Berger, Ecully; Raymond Commandeur, Vizille, and Pierre Jay, Didier Au Mont D'Or, all of France, assignors to Atochem, Puteaux, France

Continuation of Ser. No. 481,639, Feb. 20, 1990, abandoned. This application Aug. 20, 1991, Ser. No. 750,702

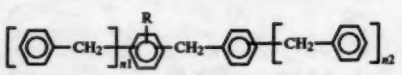
Claims priority, application France, Feb. 20, 1989, 89/02166

Int. Cl.[5] C11D *1/18, 7/72;* **C09D** *9/00;* **H01B** *3/24*

U.S. Cl. 252—570 **16 Claims**

1. A dielectric composition of matter comprising admixture of the two oligomers A_1 and A_2, wherein:

(i) A_1 comprises an isomer or mixture of isomers of the formula:



in which n_1 and n_2=0, 1 or 2, with the proviso that n_1+n_2 is less than or equal to 3 and R is a hydrogen atom; and

(ii) A_2 comprises an isomer or mixture of isomers of the same formula as A_1, except that R is methyl and n_1 and n_2 are designated q_1 and q_2 but have the same values, and with the further proviso that at least one of the oligomers A_1 and A_2 comprises an isomer having three benzene nuclei.

5,192,464

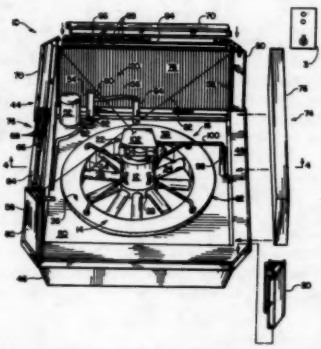
EVAPORATIVE COOLER

Lech Pawlowski, and Andrew Pawlowski, both of 11 Clearview Ave., Belair, Australia

Filed Apr. 23, 1992, Ser. No. 872,416

Int. Cl.[5] B01F *5/00, 3/04*

U.S. Cl. 261—27 **11 Claims**

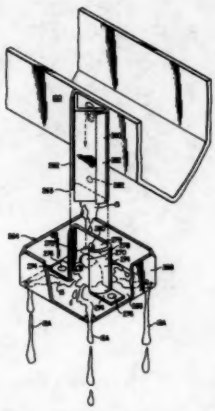


1. An evaporative air cooler employing water for cooling comprising: vertical outer walls of evaporative pads; tank means holding a supply of water and retaining water not evaporated by said evaporative material; pumping means forcing said water supply to a top of said evaporative material; conduit means conducting said water supply from said pumping means to the top of said evaporative material; an electric motor; a direct driven axial fan having an axis of rotation and having more than four fan blades; and an air inlet ring, said axial fan forcing air downwardly through said air inlet ring, said inlet ring defining an aperture centrally located within said evaporative air cooler, said inlet ring comprising a substantially cylindrical portion concentrically surrounding said fan and a flared portion upstream of the cylindrical portion with respect to the direction of air flow, said flared portion curving radially outwardly with respect to the cylindrical portion, whereby laminar air flow is maintained upon operation of said fan, and said evaporative air cooler operates with reduced objectionable air flow noise;

a speed controller connected to alternating electrical power, said speed controller providing alternating current to said motor of frequency characteristics selectively identical to an input frequency of the alternating electrical power and reduced therefrom, whereby said motor runs at a manufacturer's predetermined efficiency at any selected speed equal to and less than a manufacturer's predetermined nominal speed, to rotate said fan at a selected output;

said fan having adjustable blade pitch, whereby said fan and said motor operate to move a selected quantity of air at a selected pressure at a speed selected to avoid vibration of said motor and said fan.

5,192,465
METHOD OF AND APPARATUS FOR LIQUID DISTRIBUTION
Tullio Petrich, Rome, and Paolo Martinenghi, Pavia, both of Italy, assignors to Glitsch, Inc., Dallas, Tex.
Filed Feb. 5, 1991, Ser. No. 650,747
Int. Cl.[5] B01F 3/04
U.S. Cl. 261—97 25 Claims



1. An improved liquid flow distributor for a process column of the type wherein said distributor comprises a plurality of liquid flow members horizontally positioned above a packing section for the distribution of liquid downwardly therethrough, said flow members being constructed with ports formed therein for discharging said liquid therefrom, and said improvement comprising:

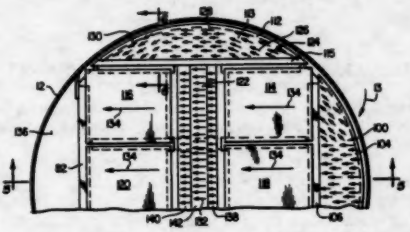
a plurality of separate distributor plates disposed beneath said flow members and horizontally secured in association with individual ones of said ports for select orientation and collection of the discharge of liquid therefrom;

said separate plates being formed so that the greatest linear distance between any two oppositely disposed points on each of said plates is on the order of less than twice the width of said flow member; and

said separate plates also being formed with means for distributing liquid horizontally thereacross and discharging said liquid downwardly from a plurality of individual drip points formed on each of said separate plates and associated with individual ports.

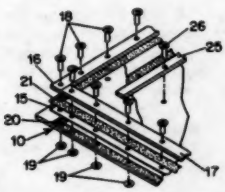
5,192,466
METHOD OF AND APPARATUS FOR FLOW PROMOTION
Michael J. Binkley, Glenn Heights, Tex., assignor to Glitsch, Inc., Dallas, Tex.
Filed Oct. 9, 1991, Ser. No. 775,299
Int. Cl.[5] B01F 3/04
U.S. Cl. 261—114.3 25 Claims

12. An improved method of mixing vapor with liquid discharged from a first downcomer of a process column onto an underlying tray of the type wherein descending liquid mixes with ascending vapor flowing through said tray, said liquid flowing across said tray prior to discharge through a second downcomer, said improvement comprising the steps of providing substantially uniformly raised active tray areas adapted for vapor-liquid flow promotion, securing said raised tray areas between said downcomers in select areas of said tray, imparting preferential vapor flow through said raised tray areas, and



injecting said preferential vapor flow into said liquid flowing across said tray for directional liquid flow therefrom.

5,192,467
AERATION PANEL STRUCTURE
Robert W. Strunc, Coral Springs, and Oscar L. Bango, Miami, both of Fla., assignors to Parkson Corporation, Fort Lauderdale, Fla.
Filed Jul. 2, 1992, Ser. No. 908,307
Int. Cl.[5] B01F 3/04
U.S. Cl. 261—122.1 7 Claims



1. An aeration panel structure comprising a support plate, a porous membrane mounted adjacent to the support plate arranged to produce fine air bubbles when subjected to air pressure beneath a liquid, air inlet means for introducing air between the panel and the membrane, peripheral hold-down strip means for clamping the membrane to the plate and secured by attachment means at spaced positions to the plate, and foam tape means made of a foamed material and having adhesive on both surfaces interposed between the membrane and the plate beneath the peripheral hold-down strip means to seal the membrane to the plate and hold the membrane in place in the spaces between the attachment means.

5,192,468
PROCESS FOR FLASH SPINNING FIBER-FORMING POLYMERS
Don M. Coates, Midlothian; Carl K. McMillin, Richmond, both of Va., and John C. Chen, Hockessin, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 602,344, Oct. 23, 1990, abandoned, which is a continuation-in-part of Ser. No. 440,156, Nov. 22, 1989, abandoned. This application Apr. 19, 1991, Ser. No. 688,017
Int. Cl.[5] B29B 9/00
U.S. Cl. 264—13 12 Claims

1. A process for flash spinning plexifilamentary film-fibril strands of a polymer that is substantially plasticizable in carbon dioxide or water and has a melting point less than 300° C., comprising the steps of:

(a) forming a spin mixture of water, carbon dioxide and the polymer at a temperature of at least 130° C. and a pressure that is greater than the autogenous pressure of the mix-

ture, the carbon dioxide being present from 30 to 90 percent based on the total weight of the spin mixture; and

(b) then flash spinning the mixture into a region of substantially lower temperature and pressure.

5,192,469

SIMULTANEOUS MULTIPLE LAYER CURING IN STEREOLITHOGRAPHY

Dennis R. Smalley, Baldwin Park, and Thomas J. Vorgitch, Simi Valley, both of Calif., assignors to 3D Systems, Inc., Valencia, Calif.

Filed Oct. 30, 1990, Ser. No. 606,802

Int. Cl.[5] B29C *35/08, 41/02, 41/52*

U.S. Cl. 264—22 **42 Claims**

1. A method of making at least a portion of an object, the object defining an object an object envelope, by stereolithography from layers of a medium being stacked along a z-dimension, the medium having a minimum solidification depth and being solidifiable upon exposure to synergistic stimulation, comprising the steps of:

selecting an area element of a first cross-section at an upper surface of a first layer of medium, the area element having a z-dimension value corresponding to a z-dimension value of said first cross-section of the object;

determining a thickness along the z-dimension between the area element at the upper surface of the first layer of medium and the object envelope underlying the area element;

comparing the determined thickness to the maximum solidification depth;

forming at least one next layer of medium over the first layer, thereby increasing the thickness along said z-dimension, without exposing the area element of the first cross-section to synergistic stimulation, until said at least one next layer of medium is formed over the first layer and said thickness is at least approximately as great as said minimum solidification depth; and

exposing at least the area element to synergistic stimulation to form said at least portion of the object.

5,192,470

METHOD OF STRETCHING AND POLARIZING POLYMER MATERIALS

David T. Wilson, Billerica, and Roger H. Tancrell, Cambridge, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 290,226, Dec. 27, 1988, abandoned, which is a division of Ser. No. 86,176, Aug. 13, 1987, Pat. No. 5,024,872, which is a continuation of Ser. No. 834,290, Feb. 27, 1986, abandoned. This application Feb. 24, 1990, Ser. No. 515,688

Int. Cl.[5] B29C *35/08*

U.S. Cl. 264—22 **19 Claims**

1. A method of providing a sheet comprising a molecularly polarized polymer material, comprises the steps of:

radiantly heating a narrow portion of a polarizable polymer sheet while stretching said sheet to provide a pair of neckdown regions with one of said neckdown regions propagating through unstretched portions of the sheet while keeping the propagating neckdown region in the radiantly heated narrow portion of the sheet and applying an electric field to said propagating neckdown region.

19. Apparatus for orientating a molecularly polarized polymer material comprises:

a housing;

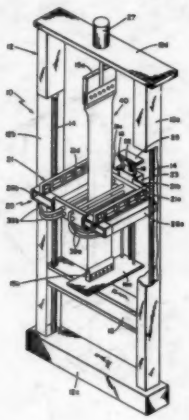
at least one threaded shaft member supported by said housing;

a moveable cross member engaged with the threaded shaft member;

a pair of locking jaw members, with a first one of said members affixed to said housing, and a second one of said members disposed on the cross member such that the second member moves at a first rate in relation to the first member in response to rotation of the threaded shaft member;

a second threaded shaft member;

a heating and polarizing assembly disposed within a region of said housing comprising:



a pair of corona discharge bars disposed opposite one another; and

a pair of infrared lamps disposed opposite one another;

means, engaged with the second threaded shaft member, for moving said assembly relative to the fixed locking jaw member.

5,192,471

PROCESS FOR PREPARING CARBON/CARBON COMPOSITE

Seiichi Uemura, Ota; Yoshio Sohda, Machida; Osamu Kato, Yokohama; Takefumi Kouno, Kawasaki, and Tsutomu Kihara, Yokohama, all of Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

Filed May 10, 1991, Ser. No. 698,663

Claims priority, application Japan, May 11, 1990, 2-119917

Int. Cl.[5] C01B *31/02*

U.S. Cl. 264—29.5 **12 Claims**

1. A process for preparing a carbon/carbon composite, which process comprises impregnating a bundle of carbon fibers with a polymer of a nitrogen-containing heterocyclic compound, carbonizing the thus-impregnated carbon fiber bundle under pressure or under pressing, and optionally, further carbonizing the thus-carbonized carbon fiber bundle at atmospheric pressure.

5,192,472

METHOD FOR PRODUCING A CERAMIC ARTICLE

Matts Andersson, Fåker, Sweden, assignor to Nobelpharma AB, Gothenburg, Sweden

Continuation of Ser. No. 483,726, Feb. 23, 1990, abandoned. This application Jul. 12, 1991, Ser. No. 729,844

Claims priority, application Sweden, Feb. 23, 1989, 8900620

Int. Cl.[5] A61C *13/00*; C04B *33/32*; B29C *59/00, 33/40*

U.S. Cl. 264—40.1 **21 Claims**

1. A method for producing an article of ceramic material for replacement of lost substance of tissue in the human body, said method comprising the steps of:

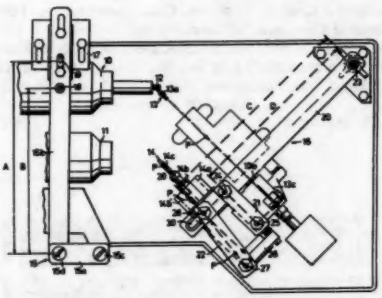
a) making a model having a contour of the article to be produced;

b) positioning both said model and a blank from which a tool is made in a copying machine having sensing members and mechanical members;

c) sensing the contour of said model and transferring said contour towards said blank by said sensing members of said copying machine;

d) linearly enlarging said contour transferred towards onto said blank by said mechanical members of said copying machine to provide a linearly enlarged contour for said blank;

e) forming from said blank a tool which has a contour corresponding to said linearly enlarged contour is capable of withstanding high pressures and of maintaining high accuracy;



f) applying and compacting a ceramic starting material over said contour of said tool to produce an article with an enlarged contour; and

g) removing said article from said tool and sintering said article whereby said article linearly shrinks until said article contour corresponds to said model contour.

5,192,473

METHOD OF MAKING NON-ORGANIC/POLYMER FIBER COMPOSITE

Louis W. Hruska, Geneva; Carl W. Brown, Jr., and Christopher E. Graham, both of Painesville, all of Ohio, assignors to Eltech Systems Corporation, Boca Raton, Fla.

Continuation of Ser. No. 318,577, Mar. 3, 1989, abandoned, which is a division of Ser. No. 93,469, Sep. 8, 1987, abandoned, which is a continuation of Ser. No. 768,941, Aug. 27, 1985, abandoned, which is a continuation-in-part of Ser. No. 651,248, Sep. 17, 1984, abandoned. This application Sep. 16, 1991, Ser. No. 766,240

Int. Cl.[5] B29C *67/02*

U.S. Cl. 264—102 **18 Claims**

1. The method of making a fiber manufacture of individual, non-isotropic fibers having non-uniform morphology, with individual fibers comprising organic polymer in fiber form having finely-divided non-organic and refractory particulates bound firmly with said organic polymer fiber within a surface thereof, which method comprises sequentially:

(1) preparing a mix of said non-organic particulates together with polymer particles which are precursors for said organic polymer in fiber form;

(2) heating said mix of particulates and particles to an elevated temperature sufficient for said organic polymer particles to be heat-softened and flow under pressure but insufficient for substantial decomposition of said polymer particles.

(3) maintaining said mix of particulates and particles at said elevated temperature, providing heat-softened polymer particles; and then

(4) vigorously grinding or shearing said mix of particulates and particles at said elevated temperature for a time sufficient to allow said heat-softened polymer particles to flow under grinding or shearing pressure, thereby

(a) preparing fibrillated and attenuated individual polymer fibers of said heat-softened polymer particles in the presence of said particulates, while

(b) binding firmly said particulates with said heat-softened polymer particles during polymer fiber formation to form said fiber manufacture of said individual, non-isotropic fibers having said non-uniform morphology.

5,192,474

MAKING A DATA-CARRYING OPTICAL DISK

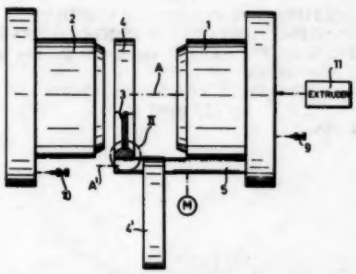
Martin Eichlseder, Tettenweis, and Peter Lichtinger, Fürstenfeldbruck, both of Fed. Rep. of Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich, Fed. Rep. of Germany

Division of Ser. No. 669,357, Mar. 14, 1991, Pat. No. 5,160,751. This application May 15, 1992, Ser. No. 883,833

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1990, 4008310

Int. Cl.[5] B29C *45/42*

U.S. Cl. 264—106 **2 Claims**



1. A method of making an optical disk having a pair of axially oppositely directed faces and an annular outer periphery, the method comprising the steps of sequentially:

a) forming a mold cavity corresponding to the shape of the disk between a pair of axially spaced parts and a demolding ring sandwiched between the parts;

b) filling the cavity with a hardenable resin that shrinks when cooled, whereby the parts form the respective faces and an inner periphery of the ring forms the outer periphery of the disk;

c) at least partially hardening the resin in the cavity;

d) axially oppositely separating the parts from each other and from the disk and leaving the disk in the ring with both of the disk faces exposed;

e) transversely displacing the ring with the disk engaged in the ring out from between the mold parts; and

f) cooling and shrinking the disk such that its outer periphery separates from the inner periphery of the ring and the disk separates from the ring.

5,192,475

METHOD OF MAKING DISCONTINUOUS CARBON FIBER REINFORCED GLASS MATRIX COMPOSITES WITH SECONDARY MATRIX REINFORCEMENT

William K. Tredway, Manchester, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 662,649, Mar. 1, 1991, Pat. No. 5,118,560. This application Mar. 16, 1992, Ser. No. 851,593

Int. Cl.[5] C03C *14/00*

U.S. Cl. 264—115 **7 Claims**

1. A method of fabricating a discontinuous carbon fiber reinforced glass matrix composite, comprising:

(a) mixing a glass powder and boron nitride reinforcing particles in a carrier liquid to create a slurry;

(b) adding a binder to the slurry;

(c) impregnating a continuous multifilament carbon fiber yarn with the slurry;

(d) drying the impregnated carbon fiber yarn to remove the carrier liquid;
(e) cutting the impregnated carbon fiber yarn to a suitable length; and

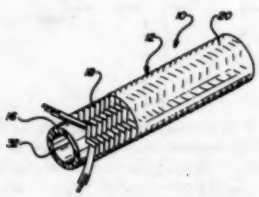
(f) molding the impregnated carbon fiber yarn in a suitable molding means to form a discontinuous carbon fiber reinforced glass matrix composite.

5,192,476

METHOD FOR FORMING A CONDUIT BY PRE-COATING THE CONDUIT PRIOR TO BRAIDING

Edward A. Green, Mantua, Ohio, assignor to Teleflex Incorporated, Limerick, Pa.

Filed Dec. 2, 1991, Ser. No. 801,023
Int. Cl.[5] B29C *63/06*
U.S. Cl. 264—127 **9 Claims**



1. A method of forming a hose assembly (10) comprising the steps of:
providing an inner liner (16) consisting essentially of a polymeric fluorocarbon material;
coating the inner liner with a fluorocarbon dispersion;
applying a woven or braided material (18) having gaps therein about the exterior of the inner liner and the fluorocarbon dispersion coating;
dispersing the fluorocarbon dispersion into the gaps of the woven or braided material (18) to form a single layer of fluorocarbon dispersion and the woven or braided material (18); and
sintering the inner liner and woven material to cure the fluorocarbon polymer coating (20).

5,192,477

SURFACE TREATMENT OF POLYAMIDE MOLDINGS

Walter Betz, Ludwigshafen, and Gerd Blinne, Bobenheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 527,941, May 24, 1990, abandoned. This application Sep. 9, 1991, Ser. No. 758,721
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1989, 3919367
Int. Cl.[5] B05D *3/10*; B29C *41/20*
U.S. Cl. 264—129 **6 Claims**

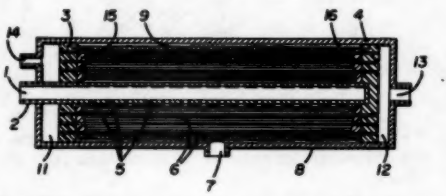
1. A process for treating a surface of a polyamide molding, comprising
(i) contacting said surface with an aqueous acid, wherein said aqueous acid is a 30 to 85% strength by weight solution of H_3PO_4 and wherein said H_3PO_4 solution further comprises an additive selected from the group consisting of
a) a polyvinylimidazole containing cationic groups,
b) an organic ether, and
c) a chloride of a divalent or tetravalent metal, to obtain a treated surface; and
(ii) metallizing said treated surface.

5,192,478

METHOD OF FORMING TUBESHEET FOR HOLLOW FIBERS

Terrence L. Caskey, Concord, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 287,508, Dec. 19, 1988, abandoned, which is a continuation of Ser. No. 663,742, Oct. 22, 1984, abandoned. This application Jan. 15, 1992, Ser. No. 823,007
Int. Cl.[5] B32B *31/06, 35/00*
U.S. Cl. 264—139 **18 Claims**



1. A method of preparing a hollow fiber membrane device comprising sequentially:
(a) forming at least one tubesheet on a plurality of hollow fiber membranes, each of the hollow fiber membranes having a first end, a second end, and a lumen extending therebetween, the at least one tubesheet being in part defined by a first face proximate to and a second face remote from the first ends of the hollow fiber membranes,
(b) treating the hollow fiber membranes embedded in the tubesheet whereby the cross-section of the hollow fiber membranes shrink to cause gaps between the hollow fiber membranes and the tubesheet;
(c) casting a liquid resin on the second face of the tubesheet whereby the resin penetrates between the hollow fiber membranes and into the gaps; and
(d) curing the resin to form at least one normally solid adherent layer in intimate contact with the second face of the tubesheet and the hollow fiber membranes embedded in the tubesheet, so as to seal the gaps between the hollow fiber membranes and the tubesheet.

5,192,479

METHOD FOR DISPERSING MISCIBLE POLYMERIC COMPONENTS

Frank E. Karasz, Amherst, Mass., and Wansoo Huh, Dayton, Ohio, assignors to The B.F. Goodrich Company, Akron, Ohio

Division of Ser. No. 443,294, Nov. 29, 1989, Pat. No. 5,106,918. This application Feb. 6, 1992, Ser. No. 832,100
Int. Cl.[5] B29C *47/88, 71/00*; B32B *31/20*; C08J *5/00*
U.S. Cl. 264—171 **7 Claims**

1. A method of shaping a plastic article comprising the steps of:
selecting a first and second polymer which are mutually soluble at a temperature above the Tg of the higher Tg polymer component and which blend exhibits a lower critical solution temperature (LCST) above the Tg of the higher Tg polymer component;
blending said first and second polymer at a temperature above the Tg composition line of said polymer pair and below the LCST phase boundary of the resulting miscible polymer blend;
shaping said miscible polymer blend into a desired article: heating the shaped article to a temperature above the LCST

of its component blended polymers to effect a phase separation of said component blended polymers; and

cooling said shaped article to a temperature at least below the Tg composition line of the polymer pair wherein the polymers become irreversibly fixed in the phase separated state.

5,192,480

METHOD OF PRODUCING MOLECULAR COMPOSITE MATERIAL INCLUDING AROMATIC POLYTHIAZOLE

Tatsuya Hattori, Tokyo, and Hiroshi Akita, Asaka, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 30, 1991, Ser. No. 753,372

Claims priority, application Japan, Sep. 3, 1990, 2-232699

Int. Cl.[5] B29C *47/00*; D01F *6/74*

U.S. Cl. 264—204 **28 Claims**

1. A method of producing a molecular composite material comprising a rigid aromatic polythiazole and a matrix polymer, which comprises the steps of:

(a) polymerizing an aromatic diaminodithiol compound, wherein hydrogen atoms of thiol groups of said aromatic diaminodithiol compound are substituted with substituted or unsubstituted alkyl groups, with a dicarboxylic acid derivative to form an alkyl groups-substituted aromatic polythiazole prepolymer in an organic solvent;

(b) preparing a homogeneous solution of said alkyl group-substituted aromatic polythiazole prepolymer and said matrix polymer in an organic solvent; and

(c) after removing said organic solvent, heating a mixture of said alkyl group-substituted aromatic polythiazole prepolymer and said matrix polymer to cause a thiazole ring closure reaction.

5,192,481

METHOD AND APPARATUS FOR MOLDING ARTICLE IN PLURALITY OF COLORS

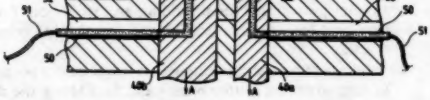
Kiyoo Morita, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 1, 1989, Ser. No. 444,235

Claims priority, application Japan, Dec. 2, 1988, 63-304215

Int. Cl.[5] B29C *45/16, 45/33*

U.S. Cl. 264—246 **9 Claims**



1. A method for molding an article having first and second portions formed of different plastic materials, comprising the steps of:

inserting a slide core into a primary mold cavity;

injecting a first plastic material into said primary mold cavity to mold said first portion of said article;

allowing said first plastic material injected into said primary cavity to harden;

at least partially withdrawing said slide core from said primary mold cavity while said first plastic material remains firmly in place in said primary mold cavity to form a space for receiving an adhesive;

injecting a small amount of an adhesive through at least one passage in said slide core along an edge of said first portion to be joined to an abutting edge of said second portion to adhere said edge of said first portion to said abutting edge of said second portion;

further withdrawing said slide core from said primary mold cavity; and

injecting a second plastic material into a secondary mold cavity left by withdrawal of said slide core to mold said second portion of said article,

wherein only said adhesive is injected through said slide core.

5,192,482

METHOD OF PRODUCING A LOCAL REINFORCEMENT IN A SANDWICH STRUCTURE

Johan A. Brambach, Leimuiden, Netherlands, assignor to Schreiner Luchtvaart Groep B.V., Leiden, Netherlands

Division of Ser. No. 476,533, Feb. 7, 1990. This application Jan. 3, 1992, Ser. No. 816,257

Claims priority, application Netherlands, Feb. 17, 1989, 8900398

Int. Cl.[5] B29C *45/16*

U.S. Cl. 264—257 **22 Claims**

1. A method for providing a local reinforcement in a sheet material comprising a core material sandwiched between two reinforced top layers, said core material being one of a thermoplastic, foamed core material and a core material having a honeycomb structure, and wherein said top layers comprise a thermoplastic synthetic plastic material reinforced with fibers, the process comprising the steps of injecting an amount of plastic material under pressure through one of the top layers into the core material, and allowing the plastic material to harden after injection.

5,192,483

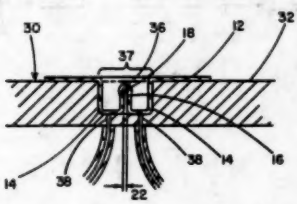
METHOD OF THERMOFORMING A SHEET AROUND A SUTURE NEEDLE TO FORM A HOLDER

Bret J. Kilgrow, and Stanley L. Mish, both of Flagstaff, Ariz., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Filed Dec. 2, 1991, Ser. No. 801,552

Int. Cl.[5] B29C *51/10, 51/12*

U.S. Cl. 264—510 **2 Claims**



1. A method of forming a suture needle holder for a suture needle comprising:

a) placing a suture needle into a trough cut into the surface of a die, wherein a cavity is cut into the surface of the die such that the trough intersects the cavity;

b) placing a sheet of planar plastic onto the surface of the die after placing the needle in the trough; and

c) thermoforming the sheet of planar plastic into the cavity of the die to form a pedestal around the needle thereby capturing the needle and forming a slot that retains the suture needle.

5,192,484

METHOD OF FORMING BLISTERS

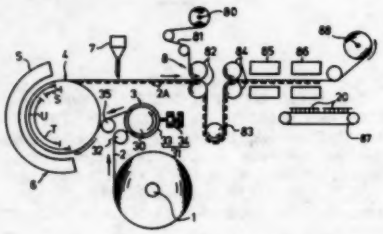
Kouzaburo Matuzawa, Tokyo, and Atsushi Fujii, Himeji, both of Japan, assignors to Matsuzawa Co., Ltd. and Idemitsu Petrochemical Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 406,727, Sep. 13, 1989, abandoned. This application Aug. 15, 1991, Ser. No. 749,493

Claims priority, application Japan, Sep. 14, 1988, 63-231578

Int. Cl.[5] B29C *51/06, 51/10*

U.S. Cl. 264—555 7 Claims



1. A method of forming blisters comprising the steps of: feeding a web material which consists of a thermoplastic resin to a rotary forming drum while applying to it a tension in the range of 5 kg/215 mm to 50 kg/215 mm, and heating the web material thus fed to the rotary forming drum, thereby forming a plurality of blisters.

5,192,485

CONTINUOUS ANNEALING LINE HAVING CARBURIZING/NITRIDING FURNACE

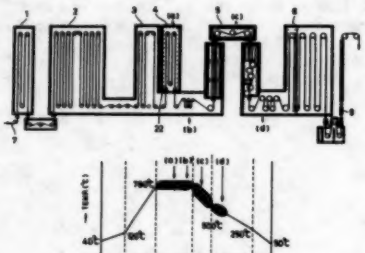
Koshi Kuramoto; Tsuguhiko Nakagawa; Satoshi Shibuya; Takao Ogawa; Toshikazu Kaihara, all of Kurashiki, and Kusuo Furukawa, Chiba, all of Japan, assignors to Kawasaki Steel Corp., Tokyo, Japan

Filed Jul. 30, 1991, Ser. No. 738,231

Claims priority, application Japan, Jul. 31, 1990, 2-202833; Nov. 30, 1990, 2-334147; Nov. 30, 1990, 2-334149

Int. Cl.[5] C23C *8/00*

U.S. Cl. 266—80 4 Claims



1. A continuous annealing line for annealing a cold-rolled steel strip, comprising:

a heating vertical furnace for heating said steel strip which is fed continuously, with or without a soaking furnace following said heating furnace;

a cooling vertical furnace in which the heated steel strip is cooled; and

a carburizing/nitriding vertical furnace disposed between said heating furnace or said soaking furnace and said cooling furnace.

5,192,486

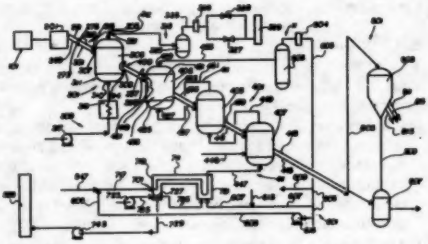
PLANT AND PROCESS FOR FLUIDIZED BED REDUCTION OF ORE

Roy H. Whipp, Miami, Fla., assignor to Flor de Venezuela, Pto. Ordaz, Venezuela

Division of Ser. No. 501,490, Mar. 30, 1990. This application May 31, 1991, Ser. No. 708,898

Int. Cl.[5] C21B *7/22*

U.S. Cl. 266—156 25 Claims



1. In a processing plant for reducing wet iron ore fines under ¼" including a reactor assembly, a preheat reactor assembly, and, an ore feed assembly with an ore feed conduit means for transferring iron ore to said reactor assembly, said preheat reactor assembly comprising:

a preheat reactor;

a quench and gas cleanup system;

an airstream source means for providing an airstream;

a natural gas source means for providing natural gas;

said preheat reactor including:

a reactor vessel including an upper cavity portion and a lower cavity portion;

ore inlet port means for connecting said upper cavity portion to the ore feed conduit means;

gaseous exhaust port means for connecting said upper cavity portion to said quench and gas cleanup system;

ore outlet port means for providing an exit for ore fines from said lower cavity portion and out of said preheat reactor;

air intake port means connecting said lower cavity portion to said airstream source means and facilitating the development of an airstream upward from the lower cavity portion to the upper cavity portion and out of the gaseous exhaust port means;

said airstream passing through falling iron ore fines and developing a fluidized bed of iron ore fines within said reactor vessel;

said air intake port means being located below said ore outlet port means;

natural gas injection means for injecting natural gas into said airstream and for igniting said natural gas in said airstream;

said natural gas injection means including natural gas intake port means connecting said lower cavity portion to said natural gas source means; and,

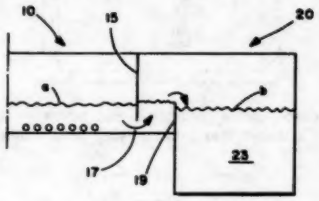
combustion air means for providing combustion air and mixing combustion air with said natural gas to facilitate combustion, said mixture being referred to as flue gas.

5,192,487

APPARATUS FOR TREATING ZINC CONCENTRATES

Rolf Malmström, Helsingfors, Finland, and Stig Petersson, Skelleftehamn, Sweden, assignors to A. Ahlstrom Corporation, Karhula, Finland

Division of Ser. No. 609,531, Nov. 6, 1990, Pat. No. 5,131,944. This application Feb. 3, 1992, Ser. No. 829,236
Claims priority, application Finland, Nov. 10, 1989, 895358
Int. Cl.[5] F27B *3/16*
U.S. Cl. 266—201 1 Claim



1. An apparatus for treating zinc concentrate comprising:
a combined furnace having a smelting portion and a slag treating portion, said furnace having side walls, a top wall and a bottom wall, and in which
said smelting portion and said slag treating portion are arranged side by side,
a first partition wall is arranged between said smelting portion and said slag treating portion for separating gas spaces in each of said smelting and slag treating portions from each other and
a second partition wall is arranged between said smelting portion and said slag treating portion for separating slag layers in each of said smelting and slag treating portions from each other, and wherein
(a) said slag treating portion is divided into an inlet zone and a fuming zone by means of a third partition wall extending downwardly from said top wall of said furnace through the gas space and through a part of the slag layer, for separating the gas spaces and the slag layers of the inlet zone and the fuming zone from each other, said third partition wall leaving a gap between said third partition wall and said bottom wall of said furnace for allowing slag to flow from the inlet zone to the fuming zone;
(b) an overflow is arranged in a first section of said second partition wall between said smelting portion and the inlet zone so as to facilitate slag flowing from said smelting portion, where a first slag level is higher than a second slag lever in the inlet zone, to the inlet zone; and
(c) a second overflow is arranged in a second section of said second partition wall between the fuming zone and said smelting portion so as to facilitate flowing of reduced slag to said smelting portion from the fuming zone, where a third slag level has been raised over the first slag level in said smelting portion by injecting air, coal, or hydrocarbon via an inlet opening in the fuming zone.

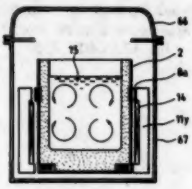
5,192,488

APPARATUS FOR HEATING MOLTEN IN A LADLE

Michio Kawasaki, Kanagawa, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Division of Ser. No. 610,249, Nov. 8, 1990. This application Oct. 25, 1991, Ser. No. 782,483
Claims priority, application Japan, Nov. 9, 1989, 1-291533; Aug. 1, 1990, 2-204631
Int. Cl.[5] B22D *18/00*
U.S. Cl. 266—208 4 Claims

1. An apparatus for heating molten metal comprising:
a ladle for holding said molten metal and provided with a refractory heat-insulating material having an outer circumference;
first cores arranged in pairs and attached to the outer circumference of said refractory heat-insulating material of said ladle;
a tray capable of mounting said ladle;
second cores attached to said tray and having magnetic pole



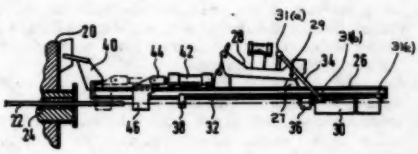
portions at both ends of said respective second cores so as to face said first cores;
a coil for exciting said second cores; and
a vacuum container having a cover capable of being opened and closed for receiving said ladle.

5,192,489

DEVICE FOR OPENING THE TAPHOLE OF A SHAFT FURNACE

Jean Metz, Luxembourg; Pierre Mailliet, Howald, and Henri Radoux, Bereldange, all of Luxembourg, assignors to Paul Wurth S.A., Luxembourg, Luxembourg

Filed Jan. 9, 1990, Ser. No. 462,415
Claims priority, application Luxembourg, Jan. 16, 1989, 87427
Int. Cl.[5] E21B *19/00*
U.S. Cl. 266—271 5 Claims



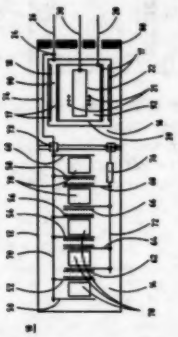
1. An apparatus for opening a taphole through a wall of a shaft furnace, said taphole being sealed by a rod held within the taphole by a hardened sealing compound, said rod extending axially in a first direction from the taphole to a free end, comprising:
a mount having a front end and a rear end, said front end being positioned in front of said taphole;
a working tool slidably displaced along said mount;
coupling means for coupling the free end of the rod to said working tool;
clamp means, slidably mounted on said mount between said front end of said mount and said working tool and axially aligned with the coupling means, for gripping the rod as the rod passes through said clamp means;
hydraulic jack means, said hydraulic jack means having a preselected stroke distance, said jack means mounted on the front end of said mount and connected to said clamp means for displacing said clamp means along a limited path, said limited path corresponding to the stroke distance of said jack means.

5,192,490

EXTENDED RANGE NEUTRON DETECTION DEVICE FOR MONITORING AND CONTROL OF NUCLEAR REACTORS

Jean-Pierre Burel, Meylan, France, assignor to Merlin Gerin, France

Filed Nov. 27, 1991, Ser. No. 799,066
Claims priority, application France, Dec. 7, 1990, 90 15462
Int. Cl.[5] G01T 3/00
U.S. Cl. 376—154 8 Claims



1. A neutron detection device for measuring the neutron fluence rate outside the core of a nuclear reactor, said device being housed in a tight enclosure and comprising:

a first detector formed by a uranium-lined fission type ionization chamber, said first detector having a positive electrode polarized by a positive voltage source by means of a first cable, and delivering a pulse output signal applied outside the enclosure to an electronic measuring circuit;

a second detector placed in the enclosure, and comprising a differential ionization chamber compensated for gamma rays, said second detector having two polarization electrodes and one measuring electrode, delimiting first and second adjacent elementary chambers of positive and negative polarities, respectively, the electrodes of said first elementary chamber being provided with a boron lining, whereas at least one of the electrodes of said second elementary chamber comprises a uranium lining so as to form a fission chamber having a lower sensitivity than that of the first detector; and

a measuring electrode connected to a second cable used to transmit an output selected from the group consisting of a pulse output signal from said second elementary chamber, and a current output signal from said first elementary chamber.

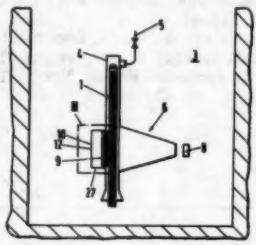
5,192,491

APPARATUS FOR THE NEUTRON-RADIOGRAPHY TESTING OF A BOILING WATER REACTOR CONTROL ELEMENT

Wolfgang Schulz, Wunstorf, Fed. Rep. of Germany, assignor to ABB Reaktor GmbH, Mannheim, Fed. Rep. of Germany

Filed Mar. 13, 1992, Ser. No. 850,865
Claims priority, application Fed. Rep. of Germany, Mar. 15, 1991, 4108438
Int. Cl.[5] G21C 17/00; G01T 3/00; G01N 23/00
U.S. Cl. 376—159 4 Claims

1. In a boiling water reactor having a control element disposed in a water pond, an apparatus for the neutron-radiography testing of the control element, comprising a film cassette having a recording area, a water-free hood fitting over the control element, said hood having an open bottom and a wall facing said film cassette, said wall having an opening formed therein with a cross section corresponding to said for receiving said film cassette, said holding device having a downwardly open side extended below said opening through which said film cassette is to be introduced into said holding device, a



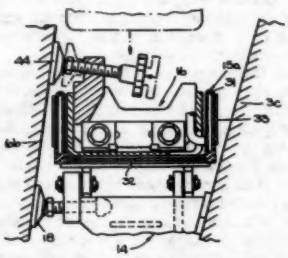
neutron source, and a collimator, said neutron source, said collimator and said film cassette lying in one measurement plane.

5,192,492

METHOD AND APPARATUS FOR FLUID SEALING OF STEAM GENERATOR

Daniel M. Gately, Peekskill, N.Y.; Louis J. Zezza, Brookfield, Conn., and William R. Masetti, White Plains, N.Y., assignors to Consolidation Edison Company of New York, Inc., New York, N.Y.

Filed Jun. 28, 1991, Ser. No. 724,389
Int. Cl.[5] G21C 13/00
U.S. Cl. 376—203 26 Claims



1. The method of reducing exposure of a human within the space between an inner tube co-axial with an outer tube to harmful radiation emitted by a radiation emitting structure within said inner tube, said inner tube having a liquid impenetrable outer surface portion which encircles at least a portion of said radiation emitting structure and said outer tube having a liquid impenetrable inner surface portion facing and coextensive with said outer surface portion and spaced from said outer surface to define said space, said space normally having liquid communication with the interior of said inner tube at one end of said space and said interior of said inner tube containing a liquid which absorbs said radiation and which normally enters into said space, said method comprising:

installing a liquid seal at said one end of said space for preventing the flow of said liquid into said space from said interior of said inner tube, the installation of said liquid seal comprising encircling a circumferential portion of said outer surface portion of said inner tube at sad end of said space with a plurality of inflatable tubes disposed end-to-end in liquid sealing relation and inflating said inflatable tubes until said inflatable tubes engage said outer surface portion and said inner surface portion of said outer tube, said inflatable tubes also being deflatable and removable from between said inner tube and said outer tube and performing one of the following two steps:

(a) during the installation of said liquid seal, maintaining said

portion of said radiation emitting structure at least substantially covered by said liquid and maintaining said liquid in said space and thereafter, removing at least a portion of said liquid from said space at the side of said liquid seal opposite from said end of said space; and

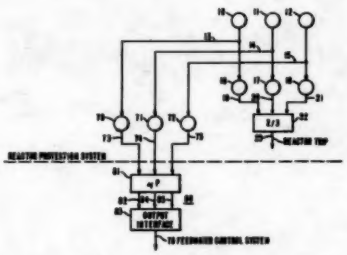
(b) before the installation of said liquid seal, removing said liquid from said interior of said inner tube until said space is at least partially free of said liquid and thereafter, installing said liquid seal and then adding said liquid to said interior of said inner tube until said radiation emitting structure is at least substantially covered by said liquid.

5,192,493

MEDIAN SIGNAL SELECTOR FOR FEEDWATER CONTROL SYSTEMS

Lawrence E. Erin, Monroeville; William J. Catullo, Jr., Plum Boro; Richard E. Paris, Monroeville, and John M. Gallagher, Mt. Lebanon, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 30, 1989, Ser. No. 400,837
Int. Cl.[5] G21C *7/32*
U.S. Cl. 376—211 **12 Claims**



1. A system for improving the performance of nuclear power plant feedwater control systems and simplifying steam generator low water level reactor protection logic, comprising:

means for redundantly measuring steam generator water level and generating a plurality of signals representative thereof;

means for selecting a median steam generator water level signal from among said plurality of steam generator water level signals; and

means for communicating said median steam generator water level signal to the feedwater control system.

5,192,494

ARRANGEMENT FOR PROTECTING REACTOR CONTAINMENT INTEGRITY

Kurt M. Becker, Illerstigen 16, S-171 71 Solna, and Johan Engström, Dalagatan 62, S-113 24 Stockholm, both of Sweden

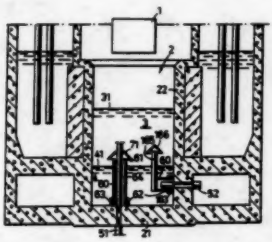
PCT No. PCT/SE90/00147, § 371 Date Aug. 29, 1991, § 102(e) Date Aug. 29, 1991, PCT Pub. No. WO90/10936, PCT Pub. Date Sep. 20, 1990
PCT Filed Mar. 7, 1990, Ser. No. 752,517
Claims priority, application Sweden, Mar. 10, 1989, 8900843
Int. Cl.[5] G21C *9/016*
U.S. Cl. 376—280 **7 Claims**

1. An arrangement for protecting the integrity of a nuclear reactor containment, the arrangement comprising:

the nuclear reactor containment including a reactor vessel for containing a nuclear reactor core, a pool beneath the reactor vessel for receiving molten core material from the vessel, the pool being adapted to be filled with water to cool and granulate molten core material which may descend from the reactor vessel during a core meltdown to form a granulate bed of the core material in a lower part of the pool;

a tubular surface penetrating into the pool of the nuclear reactor containment and below the reactor vessel;

a pipe around the tubular surface and being so sized and separated from the tubular surface as to define a gap between them for the pipe to protect the tubular surface from the effects of the core meltdown; the pipe having an upper end and a first opening in the pipe at the upper end, the first opening being located below the height of the surface of water that will enter the pool on a meltdown



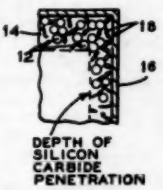
and above the highest level in the pool which the granulate bed could be expected to reach; the pipe having a lower end and a second opening at the lower end, the second opening being located at the height in the pool as to be in the granulate bed, and the second opening communicating with the lower part of the pool so that water flowing into the gap through the first opening flows through the gap around the tubular surface and out through the second opening into the granulate bed to cool the granulate bed.

5,192,495

SIC BARRIER OVERCOATING AND INFILTRATION OF FUEL COMPACT

Colin S. Caldwell, Lynchburg, and Helen H. Moeller, Concord, both of Va., assignors to Babcock & Wilcox Company, New Orleans, La.

Continuation of Ser. No. 661,153, Feb. 27, 1991, abandoned. This application Jan. 16, 1992, Ser. No. 821,873
Int. Cl.[5] G21C *3/00*
U.S. Cl. 376—417 **13 Claims**



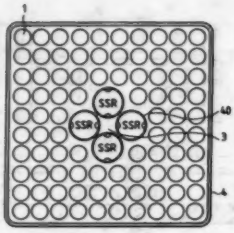
1. An outer barrier comprising an independent silicon carbide overcoating of a nuclear fuel compact, said compact comprising a multitude of individually coated fuel particles held or dispersed within a carbonaceous matrix composed of material other than primarily silicon carbide, said matrix having an outer surface and fingers extending inward therefrom into which said silicon carbide overcoating is deposited thereby completely sealing said matrix, and hence said nuclear fuel compact, and also locking said overcoating in place so as to contain the majority of fission products therein.

5,192,496

FUEL ASSEMBLY AND UPPER TIE PLATE THEREOF

Hideo Soneda; Junichi Yamashita; Yukihisa Fukasawa; Taro Ueki, and Sadayuki Izutsu, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 1, 1991, Ser. No. 724,168
Claims priority, application Japan, Jul. 4, 1990, 2-176565
Int. Cl.[5] G21C 7/06
U.S. Cl. 376—428 13 Claims



1. A fuel assembly comprising:

a plurality of fuel rods arranged in a square 10×10 lattice other than at a central region thereof corresponding to a rectangular space for accommodating an arrangement of 4×4 fuel rods;

four fuel rods arranged so that a respective one of the four fuel rods is disposed at each of four corner portions of the central region; and

water rod means including one of a plurality of water rods and a plurality of spectral shift water rods being disposed in the central region, one of the plurality of water rods and the plurality of spectral shift water rods being arranged adjacent to and spaced form one another along a circular path so as to delimit intervals therebetween in the central region in a space of the central region other than the four corner portions for accommodating 12 fuel rods.

5,192,497

SUPERALLOYS WITH LOW THERMAL-EXPANSION COEFFICIENT

Koji Sato, Yasugi, Japan, assignor to Hitachi Metals, Ltd., Tokyo, Japan

Filed Mar. 2, 1992, Ser. No. 844,287
Claims priority, application Japan, Dec. 18, 1990, 2-411479
Int. Cl.[5] C22C 38/08, 30/00
U.S. Cl. 420—581 9 Claims

1. A superalloy with a low thermal expansion coefficient consisting essentially of, by weight percent: 0.1% or less of carbon, 1.0% or less of Si, 1.0% or less of Al, 1.0% or less of Mn, 0.5 to 2.5% of Ti, Nb part of which can be substituted by Ta to satisfy 3.0% $<$(Nb+0.5 Ta) $\leqq$6.0% $>$0 to 0.01% of boron, 20 to 32% of Ni and more than 16% and not more than 30% of Co within a range of 48.8% $\leqq$(1.235 Ni+Co) $<$55.8%, and the balance essentially Fe except for incidental impurities, the superalloy having a mean coefficient of thermal expansion of 7.0×10^{-6}/° C. or less from room temperature to 400° C.

5,192,498

ELIMINATION OF SULFIDE ODOR IN THIOCARBAMATE HERBICIDES

Chia-Chung Chen, Tsaoton, Taiwan, and Ray J. Lo, Alameda, Calif., assignors to Imperial Chemical Industries plc, London, Great Britain

Filed Oct. 11, 1991, Ser. No. 775,680
Int. Cl.[5] A61L 2/00; A01N 37/00
U.S. Cl. 422—5 7 Claims

1. A process for reducing mercaptan odor from a thiocarbamate compound comprising the steps of:

A) mixing an aqueous solution containing from about 1 to about 10 parts by weight of sodium hypochlorite, calcium hypochlorite, chloramine-B hydrate or chloramine-T-hydrate with 100 parts by weight of thiocarbamate to form treated thiocarbamate and an aqueous layer;

B) separating the aqueous layer from the treated thiocarbamate; and

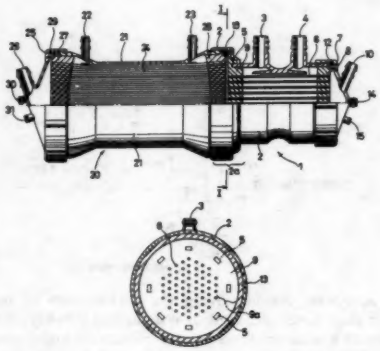
C) mixing from about 0.01 to about 0.5 parts by weight of oxalic acid, maleic acid or citric acid with 100 parts by weight of the treated thiocarbamate.

5,192,499

FLUID PROCESSING APPARATUS AND ARTIFICIAL LUNG

Satoru Sakai, Kanagawa, and Kiyohide Ishikawa, Shizuoka, both of Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 12, 1990, Ser. No. 551,942
Claims priority, application Japan, Jul. 14, 1989, 1-183499
Int. Cl.[5] A61M 1/03, 1/16, 1/36
U.S. Cl. 422—46 14 Claims



1. An artificial lung equipped with a heat exchanger comprising:

a heat exchanger comprising:

a heat exchange housing having:

an internal wall;

a heat-exchange fluid inlet;

a heat-exchange fluid outlet;

a first end portion; and

a second end portion;

heat-exchange tubular means positioned in said heat exchange housing;

first and second partitions formed of a potting composition for respectively securing a first and a second end portion of said heat-exchange tubular means to said heat exchange housing in a fluid tight seal to partition an interior portion of said heat exchange housing into a heat-exchange fluid chamber in fluid communication with said heat-exchange fluid inlet and said heat-exchange fluid outlet, said heat exchange fluid chamber being defined by an outside surface of said heat exchange tubular means, said internal wall of said heat exchange housing and an internal surface of each of said first and second partitions, said internal surfaces of said partitions facing an interior of said heat exchange fluid chamber, and a blood chamber being defined by an internal surface of said heat-exchange tubular means;

a blood inlet and a blood outlet in fluid communication with said blood chamber;

a plurality of spaced apart projections formed on an inner surface of said first end portion of said heat exchange housing so as to project in a direction toward an end of said first end portion of said heat exchange housing and

away from said second end portion of said heat exchange housing;

said first end portion of said heat exchange housing being positioned relative to said first partition so that an entirety of each of said plurality of spaced apart projections formed on said inner surface of said first end portion of said heat exchange housing are embedded in an annular area within said first partition such that a plurality of projection-free areas are formed between adjacent projections where said plurality of projections are not present, said projection-free areas enabling said potting composition to flow therethrough when said first partition is being formed from said potting composition; and

an artificial lung comprising:

an artificial lung housing having a gas inlet and a gas outlet;

a bundle of gas-exchange hollow fibers positioned in said artificial lung housing;

partitions for respectively securing a first and a second end portion of said bundle of gas-exchange hollow fibers to said artificial lung housing in a fluid tight seal, to partition an interior of said artificial lung housing into a gas chamber in fluid communication with said gas inlet and said gas outlet, and a blood chamber defined in said gas-exchange hollow fibers; and

a blood inlet portion and a blood outlet portion in fluid communication with said blood chamber;

said first partition of said heat exchanger formed in said first end portion of said heat exchange housing facing and being connected to a given one of said partitions of said artificial lung.

5,192,500

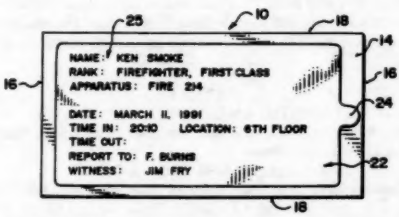
FIREFIGHTER SAFETY BADGE

George A. Treddenick, 234 Kingston Row, Winnipeg, Manitoba, Canada R2M 0T4

Filed Apr. 5, 1991, Ser. No. 681,005

Int. Cl.[5] G01N *21/00*

U.S. Cl. 422—56 **3 Claims**



1. A method for generating records relating to the entry into a hazardous area of a person comprising providing a badge body having thereon indicia identifying and relating to the person intended to use the badge body, providing on the badge body means for indicating the presence near the badge of a toxic compound, providing a detachable adhesive label attached to the badge body and covering said indicating means, providing on an exposed surface of the adhesive label indicia identifying the person and providing blank areas arranged for manual entry of further indicia relating to a time of entry into the hazardous area and identifying the hazardous area, prior to entering the hazardous area, manually marking the adhesive label with said indicia relating to the hazardous area and a time of entry into the hazardous area, removing the adhesive label from the badge body to expose the indicating means to the atmosphere, attaching the badge body to the person for transportation by the person into a hazardous area, attaching the marked label to a surface adjacent the hazardous area for collection, and subsequently collecting the adhesive label and badge body to provide record of any exposure to said toxic compound by said person.

5,192,501

METHOD OF FORMULATING A TEST INK FOR A FECAL OCCULT BLOOD TEST PRODUCT

Philip A. Guadagno, Vidor, and Janine P. Burrows, Orange, both of Tex., assignors to Helena Laboratories Corporation, Beaumont, Tex.

Filed Apr. 4, 1989, Ser. No. 333,828

Int. Cl.[5] H01N *33/50*

U.S. Cl. 422—56 **19 Claims**

1. A method of formulating a test ink for a fecal occult blood test product, the method comprising the steps of:

a. dissolving at least one chromogen reagent in a solvent comprising a surfactant to provide a first solution, said surfactant being present in an amount effective to prevent premature reaction of the at least one chromogen reagent and an oxygen donor reagent, and said at least one chromogen reagent being capable of being oxidized by an oxygen donor reagent in the presence of a substance having peroxidase-like activity to provide a visible change of color;

b. providing a second solution comprised of at least one oxygen donor reagent dissolved in a solvent comprising a surfactant, which surfactant is the same surfactant as contained in the first solution; and

c. adding the second solution to the first solution to provide a test ink.

5,192,502

DEVICES FOR USE IN CHEMICAL TEST PROCEDURES

John W. Attridge, Weybridge, and Alan M. Smith, Altrincham, both of United Kingdom, assignors to Ares-Serono Research & Development Limited Partnership, Boston, Mass.

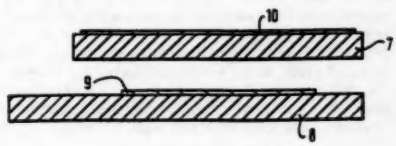
PCT No. PCT/GB90/00764, § 371 Date Dec. 13, 1990, § 102(e) Date Dec. 13, 1990, PCT Pub. No. WO90/14590, PCT Pub. Date Nov. 29, 1990

PCT Filed May 17, 1990, Ser. No. 623,734

Claims priority, application United Kingdom, May 18, 1989, 8911462

Int. Cl.[5] G01N *21/01*

U.S. Cl. 422—57 **5 Claims**



1. In a sample collecting and testing device used in an optical assay for analyte present in a sample liquid, said device comprising a pair of parallel transparent plates with a capillary cavity therebetween to allow uptake of sample liquid therein, one of said plates being a light-transmissive waveguide having a reagent appropriate to the assay immobilized on its internal surface, the improvement wherein the other of said plates has an opaque or light-absorbing material coated on its external surface.

5,192,503

PROBE CLIP IN SITU ASSAY APPARATUS

Charles M. McGrath, 6669 Beach, Troy, Mich. 48098, and Jennipher Grudzien, 440 Brocker Rd., Metamora, Mich. 48455

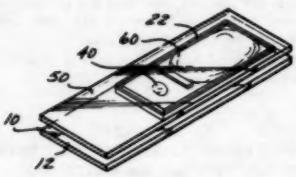
Filed May 23, 1990, Ser. No. 528,067

Int. Cl.[5] G01N *21/01, 21/78*; B65D *49/02, 49/08*

U.S. Cl. 422—57 **7 Claims**

1. A reaction chamber apparatus for in situ assay of a tissue section mounted on a slide, the reaction chamber apparatus comprising:

a planar slide having a tissue section mounted thereon;
a planar plate formed of a plastic material;
a material layer mounted on one end of the plate to form a raised surface on one major side of the plate, the material layer being integral with the plate;
a first seal member mounted on the material layer and having a closed periphery formed of opposed pairs of side walls defining an interior cavity on the material layer between the opposed pairs of the side walls of the first seal member;
a second seal member mounted on the material layer intermediate one pair of side walls of the material layer, the second seal member having first and second ends, the first and second ends of the second seal member being spaced from another pair of opposed side walls of the first seal member to form first and second free gravity fluid flow communicating channels each providing flow communication between first and second surfaces on the material layer, the first and second surfaces being located between the sides of the second seal member and the one pair of opposed side walls of the first seal member; and



a probe formed of a dried, soluble reagent material mounted on the second surface of the material layer;
the first and second seal members sealing contacting the slide when the slide brought into proximity with the material layer to form a sealed reaction chamber between the portion of the slide having the tissue section mounted thereon and the first surface of the material layer, a liquid reactant disposed in the reaction chamber, and a sealed mixing chamber between a remaining portion of the slide and the second surface of the material layer, the reaction chamber and the mixing chamber being disposed in bi-directional fluid flow communication by the first and second fluid flow channels for transfer of the liquid reactant to the mixing chamber to release the probe from the second surface of the material layer and for transfer of the released probe to the reaction chamber for reaction with the tissue section through the first and second fluid flow channels upon bi-directional, end-to-end rotation of the sealingly connectrd slide and plate.

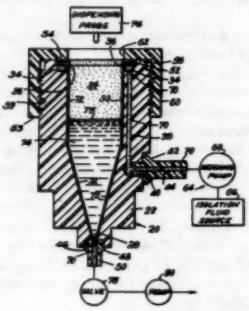
5,192,504

FLUSHABLE LOW CARRYOVER CONTAINER

Michael M. Cassaday, Valhalla, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Continuation of Ser. No. 9,424, Feb. 2, 1987, abandoned, which is a continuation of Ser. No. 721,919, Apr. 11, 1985, abandoned. This application Jul. 28, 1989, Ser. No. 387,267
Int. Cl.[5] G01N *21/05*
U.S. Cl. 422—64 **41 Claims**

1. In an analysis system for the successive analyses of a series of discrete samples liquids with minimum carryover therebetween, the improvements comprising, a container comprising container wall means defining a container bore for the successive containment and processing for analysis of said discrete samples liquids, container bore inlet means for the successive introductions of said discrete sample liquids into said container bore, and container bore outlet means for the successive flows of said discrete liquids from said container bore, means operatively associated with said container bore inlet means for successively introducing said discrete sample liquids into said container bore, said discrete sample liquids introduction means only being operable to introduce a succeeding discrete sample liquid into said container bore after a precedingly introduced discrete sample liquid has flowed completely from said container bore, means operatively associated with said container bore inlet means for introducing at least one discrete sample liquid processing liquid into said container bore for concomitant containment therewithin the each of said discrete sample liquids, and mean independent of said discrete sample liquids and processing liquids introduction means for introducing an isolation liquid which is immiscible with said discrete sample liquids and said processing liquid into said container bore inlet means for flow through said container bore to cover the walls of said container bore from said container bore inlet means to



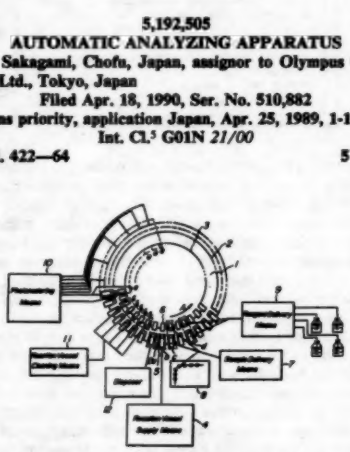
said container bore outlet means with an independently flowing stream of said isolation liquid, said discrete sample liquids and said processing liquids being essentially aqueous liquids, said isolation liquid being a non-aqueous liquid, and said container bore walls being formed by a fluorinated hydrocarbon material which is selectively wettable by non-aqueous liquids to the substantial exclusion of aqueous liquids whereby, contact by said discrete sample liquids and said processing liquids with the walls of said container bore is substantially prevented by said isolation liquid stream to minimize carryover between said discrete sample liquids attendant the successive containment and processing thereof in said container bore.

5,192,505

AUTOMATIC ANALYZING APPARATUS

Toshio Sakagami, Chofu, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 18, 1990, Ser. No. 510,882
Claims priority, application Japan, Apr. 25, 1989, 1-103458
Int. Cl.[5] G01N *21/00*
U.S. Cl. 422—64 **5 Claims**



1. An automatic analyzing apparatus comprising:
a first reaction line on which a plurality of first reaction vessels are detachably mounted to be disposable;
a second reaction line on which a plurality of second reaction vessels are non-detachably mounted to be reusable;

a common transportation means for transporting the first and second reaction vessels respectively mounted on said first and second reaction lines to a reaction vessel supply position, a sample delivery position, a reagent delivery position, a photometering position, a reaction vessel cleaning position and a disposing position;

reaction vessel supply means for supplying said first reaction vessels to said first reaction line at the reaction vessel supply position;

sample delivery means for delivering a sample into at least one reaction vessel mounted on at least one of said first and second reaction lines at the sample delivery position in accordance with at least one test item to be analyzed for the relevant sample;

reagent delivery means for delivering reagents into the vessels mounted on said first and second reaction lines at the reagent delivery position in accordance with items to be analyzed;

photometering means for measuring given substances contained in test liquids contained in the reaction vessels mounted on the first and second reaction lines at the photometering position, each of said test liquids being a mixture of a sample and a reagent;

first cleaning means for cleaning the second reaction vessels mounted on the second reaction line at the reaction vessel cleaning position; and

reaction vessel disposing means for disposing the first reaction vessels mounted on the first reaction line at the disposing position.

5,192,506

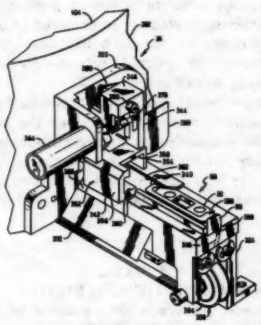
INCUBATOR PORT CLOSURE FOR AUTOMATED ASSAY SYSTEM

Fareed Kureshy; Charles A. DeAngelis, both of Westwood, and Robert C. MacIndoe, Jr., Linwood, all of Mass., assignors to P B Diagnostic Systems, Inc., Westwood, Mass.

Filed Feb. 14, 1991, Ser. No. 655,541

Int. Cl.[5] G01N *33/48*

U.S. Cl. 422—64 **4 Claims**



1. An automated assay system for use with assay cartridges, the system comprising

a temperature controlled chamber, the chamber having a top wall and a bottom wall and a sidewall connecting the top wall with the bottom wall, the sidewall encircling the chamber, there being a port in the sidewall and a door for closing the port;

a plurality of berths disposed in the chamber for receiving cartridges;

a conveyor disposed in the chamber for conveying said berths along the sidewall and sequentially past said port;

an injector disposed outside said chamber and at said port for inserting a cartridge via said port into one of said berths and for extracting a cartridge via said port from one of said berths; and

wherein said injector includes means for opening the door prior to cartridge insertion or cartridge extraction and for closing the door subsequent to a cartridge insertion or a cartridge extraction and means for ejecting a spent cartridge subsequent to extraction of the cartridge from said chamber

said injector including a track for guiding a cartridge along a path into said chamber, a portion of said track being included in said ejecting means, wherein said track portion is arranged to swing away from said path during ejection of a cartridge to dislodge a cartridge from the path to accomplish ejection of the cartridge.

5,192,507

RECEPTOR-BASED BIOSENSORS

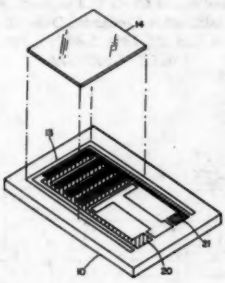
Richard F. Taylor, W. Boxford; Ingrid G. Marenchic, Walpole, and Edward J. Cook, South Hamilton, all of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Continuation of Ser. No. 203,281, Jun. 6, 1988, abandoned, which is a continuation-in-part of Ser. No. 58,389, Jun. 5, 1987, Pat. No. 5,001,148. This application Mar. 4, 1991, Ser. No. 664,440

The portion of the term of this patent subsequent to Mar. 19, 2008, has been disclaimed.

Int. Cl.[5] G01N *33/483*

U.S. Cl. 422—68.1 **9 Claims**



1. An opiate receptor-containing biosensor for the determination of an opiate in a sample comprising:

a) a polymeric film formed by chemical copolymerization of a solution comprising:

1) a base component which is a protein,

2) an opiate receptor; and

3) at least one stabilizer selected from the group consisting of lipids, detergents and antioxidants;

b) a first sensor comprising a first conductor and a second conductor which are in contact with said film; and

c) a current source in conductive contact with the first and second conductors for measuring an electrical characteristic of the polymeric film.

5,192,508

CARBOHYDRATE CELLULAR ADHESION APPARATUS

Ronald L. Schnaar, Columbus, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Continuation of Ser. No. 192,959, May 12, 1988, abandoned. This application Jun. 23, 1992, Ser. No. 902,755

Int. Cl.[5] B01L *3/08*; C12M *1/18*

U.S. Cl. 422—70 **6 Claims**

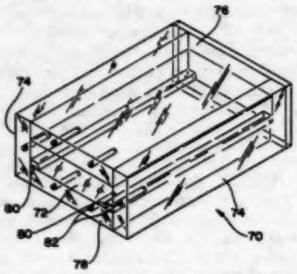
1. An apparatus for binding cells to a thin layer chromatogram surface, said apparatus comprising:

(a) a sealable chamber suitable for fitting into a multiwell plate centrifuge carrier, said chamber having a side opening for receiving a thin layer chromatogram;

(b) blocks adjacent the floor of said chamber and along the sides of said chamber to hold said chromatogram against the ceiling of said chamber;

(c) gasket means and a cover cooperating to provide an air-tight seal for said opening; and

(d) means for locking said cover into a sealing position with respect to said opening;



wherein said locking means and said seal are capable of withstanding centrifugal forces in the range of approximately 250 to 1000 times the force of gravity.

5,192,509

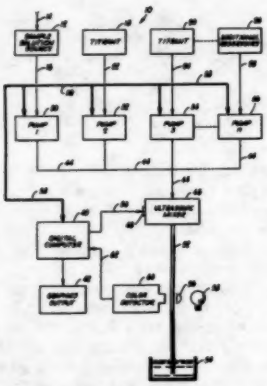
APPARATUS FOR AUTOMATIC TITRATION

Jim B. Surjaatmadja, and Clyde L. Lee, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Aug. 22, 1991, Ser. No. 748,986

Int. Cl.[5] G01N *31/16*

U.S. Cl. 422—75 **17 Claims**



1. Apparatus for continuous titration of liquid sample comprising:

a delivery tube;

first means including a sample source for receiving and pumping a continuous flow of liquid sample into said delivery tube;

second means including a reservoir for pumping reagent at a controlled rate into said delivery tube;

third means including a reservoir for pumping selected titrant at a controlled rate into said delivery tube;

an ultrasonic mixer receiving liquids from said delivery tube;

a mixing tube passing mixed liquids from said ultrasonic mixer therethrough;

optical detector means disposed in viewing relationship adjacent to said mixing tube and producing an output signal indicative of sample titrant fluid equivalence; and

a computer receiving said detector means output signal and producing a first signal output to control the first means for receiving and pumping liquid sample, a second signal output to control the second means for pumping reagent, and a third signal output to control the third means for pumping titrant.

5,192,510

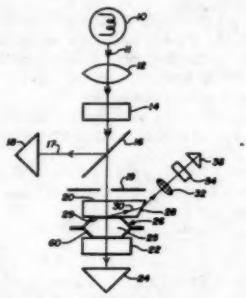
APPARATUS FOR PERFORMING FLUORESCENT ASSAYS WHICH SEPARATES BULK AND EVANESCENT FLUORESCENCE

Steven J. Zoha, Jarrettsville, Md.; James E. Davis; Alan R. Craig, both of Wilmington, Del., and Alan M. Hochberg, Hockessin, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 30, 1991, Ser. No. 648,005

Int. Cl.[5] G01N *21/01, 21/64*

U.S. Cl. 422—82.05 **1 Claim**



1. Apparatus for optically detecting an analyte of interest by separating bulk and evanescent emission from a tag capable of producing inelastic scattering of excitation radiation, comprising:

an optically transparent sample holder having an inner wall and holding a sample having the tag,

means for binding the tag to the inner wall immobilized on the inner wall, wherein at least a portion of the tag is bound to the inner wall in the presence of the analyte,

a prism connecting the sample holder contiguous the inner wall to provide an optical interface with the sample, the prism having an exit surface, and

means to excite the sample and tag to produce bulk emission and evanescent emission such that the bulk emission reaches the exit surface at an angle of incidence with the exit surface which is greater than the critical angle, whereby the bulk emission is totally internally reflected and the evanescent emission is passed through the exit surface.

5,192,511

PIPETTE TIP AND PISTON

William J. Roach, Auburn, Calif., assignor to Tri-Continent Scientific, Inc., Grass Valley, Calif.

Filed May 31, 1991, Ser. No. 708,909

Int. Cl.[5] B01L *3/02*

U.S. Cl. 422—100 **13 Claims**

1. A fluid handling apparatus for a pipette, comprising:

(a) a tube, said tube including an open first end and an open second end, said tube including interior and exterior walls, said interior and exterior walls being conically tapered toward said first end;

(b) a radially projecting collar, said collar extending from said second end of said tube, said collar including an interior region;

(c) snap coupling means for coupling said collar to the body of a positive displacement pipette, said snap coupling means located within said interior region of said collar;

(d) a piston, said piston extending into said tube, said piston

having a first end and a second end, said first end of said piston aligned with said first end of said tube, said piston being conically tapered toward said first end, said piston being slidable within said tube; and

(e) a plurality of spaced apart inwardly converging resilient prongs, said prongs extending from said second end of said

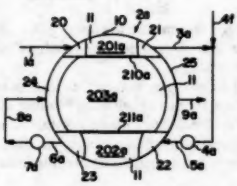
piston, said prongs having beveled ends, said prongs forming a receptacle for coupling to a plunger in a positive displacement pipette, whereby said prongs will expand outwardly upon insertion of a plunger in a positive displacement pipette into said receptacle thereby frictionally engaging the plunger.

5,192,512

APPARATUS FOR PERFORMING CHEMICAL REACTIONS UNDER PRESSURE IN A MULTI-STAGE REACTION ZONE WITH EXTERNAL INTERMEDIARY THERMAL CONDITIONING

Dang V. Quang, Neuilly; Pierre Ham, La Celle Saint Cloud; Daniel Gelas, Croissy Sur Seine, and Christian Legrand, Cergy, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Division of Ser. No. 146,665, Jan. 21, 1988, Pat. No. 5,045,568.
This application Jun. 4, 1991, Ser. No. 709,932
Claims priority, application France, Jan. 27, 1987, 87 00751
Int. Cl.[5] B01J *8/04*
U.S. Cl. 422—190 **12 Claims**



1. An apparatus for conducting chemical reactions, comprising:

a reactor of elongated shape containing at least one catalyst bed, said reactor comprising a substantially cylindrical casing having a generatrix, and first and second tight end parts;

at least two tight adjacent compartments contained in said reactor of elongated shape, said compartments extending lengthwise, in the direction of the generatrix, along substantially the entire length of said reactor;

each group of two adjacent compartments having a common partition-wall, said common partition-wall having a longitudinal axis which is either substantially parallel to said generatrix or substantially oblique with respect thereto, said common partition-wall being in fluid tight connection with said casing, and each of said compartments having a first end and a second end opposite said first end;

each compartment further comprising at least one inlet means located at said first end for introduction of fluid into said compartment and at least one outlet means located at said second end for removal of fluid which has passed through said compartment, said inlet and outlet means being in fluid communication with the exterior of said reactor through said casing;

at least one distribution means in each of said compartments for crosswise distributing fluid in a direction substantially perpendicular to said generatrix, said at least one distribution means being in fluid communication with said at least one inlet means;

at least one collecting means in each of said compartments for removing fluid therefrom, said at least one collecting means being in fluid communication with said at least one outlet means, whereby fluid introduced into each of said compartments via said at least one inlet means is distributed by said at least one distribution means, traverses said compartment from said first end to said second end, is collected by said at least one collecting means, and is removed by said at least one outlet means; and

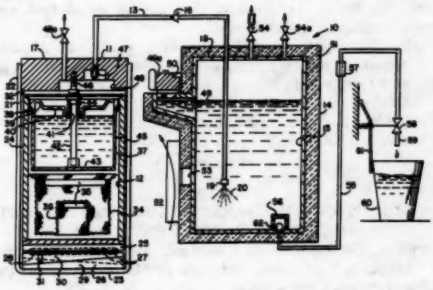
at least one heat transfer means interposed between said at least one outlet means of one of said compartments and said at least one inlet means of another of said compartments, said at least one heat transfer means being external to said casing.

5,192,513

HIGH SPEED PROCESS AND APPARATUS FOR CARBONATING WATER

William C. Stumphauzer, 44550 Stang Rd., Elyria, Ohio 44035; Hugh F. Groth, Richfield, and L. Scot Duncan, Independence, both of Ohio, assignors to William C. Stumphauzer, Elyria, Ohio

Filed Jul. 26, 1991, Ser. No. 736,628
Int. Cl.[5] A23L *2/26*; B01J *8/00*
U.S. Cl. 422—305 **9 Claims**



1. A high speed process for carbonating water comprising the steps of:

(A) providing a first pressure vessel having an upper portion and a lower portion temporarily separated therefrom;

(B) providing a second pressure vessel;

(C) operatively connecting the interiors of the first and second pressure vessel to each other with a gas conducting means;

(D) positioning a selected quantity of a carbon dioxide generating compound at a first location within the lower portion of the first pressure vessel at the bottom thereof;

(E) positioning a contained selected quantity of water in a container at a second location within the first pressure

vessel above and out of contact with the carbon dioxide generating compound;

(F) filling the second pressure vessel to a selected level with a larger quantity of water than that in the first pressure vessel;

(G) sealing the second pressure vessel from the outside atmosphere;

(H) sealing the first pressure vessel from the outside atmosphere by moving the lower portion of the first pressure vessel into sealing contact with the upper portion thereof;

(I) releasing the contained quantity of water from the container into the carbon dioxide generating compound in the first pressure vessel to chemically react with the carbon dioxide generating compound and generate pressurized carbon dioxide gas therein with sufficient pressure to pass into the second pressure vessel and carbonate the water therein;

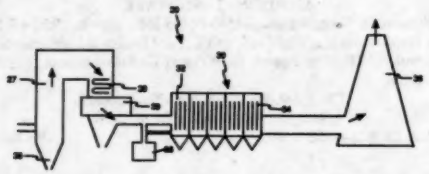
(J) the selected level of the water in the first and second pressure vessels being such that the combined head space remaining within both the pressure vessels is at least 5% of the total combined volume of both said pressure vessels, and

(K) providing a means to remove carbonated water from the second pressure vessel upon demand.

5,192,514
METHOD OF REMOVING SELENIUM FROM FLUE GASES

Edward B. Dismukes, Birmingham, Ala., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Feb. 24, 1992, Ser. No. 840,452
Int. Cl.[5] B01D *47/00*; B01J *8/00*; C01B *19/00*
U.S. Cl. 423—210 **12 Claims**



1. A method of removing gaseous selenium from a glue gas produced by the combustion of a carbonaceous fuel, said method comprising the steps of:

injecting ammonia within said flue gas in an effective amount to react with said gaseous selenium of said flue gas at a temperature of approximately 300° F. to produce a solid selenium reaction product; and

providing a filter assembly for receiving said solid selenium reaction product.

5,192,515
REDUCTION OF NITROGEN OXIDE AND CARBON MONOXIDE IN EFFLUENT GASES

Ralph A. Gardner-Chavis, Cleveland, and Michael P. May, Canton, both of Ohio, assignors to Molecular Technology Corporation, Canton, Ohio

Continuation-in-part of Ser. No. 585,937, Sep. 20, 1990, abandoned. This application Mar. 12, 1991, Ser. No. 668,196
Int. Cl.[5] C01B *21/02*
U.S. Cl. 423—213.2 **6 Claims**

1. A method for simultaneously reducing the nitrogen oxide and carbon monoxide content of a gas stream and converting the nitrogen oxide and carbon monoxide to nitrogen and carbon dioxide which comprises

(A) contacting said gas stream with a dysprosium-containing catalyst at a temperature of from about 300° F. to about 1200° F. for a period of time sufficient to remove nitrogen oxide from the gas by reaction with the carbon monoxide, said catalyst being free of additional metals capable of promoting the oxidation of carbon monoxide, and thereafter

(B) contacting the gas with a second metal-containing catalyst capable of promoting the oxidation of carbon monoxide in the presence of oxygen to reduce further the amount of carbon monoxide in the gas, provided that the second metal-containing catalyst does not contain dysprosium.

5,192,516
METHOD FOR LOW NITROGEN OXIDE COMBUSTION IN SUPERSONIC TRANSPORTS

Sanjay M. Correa, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

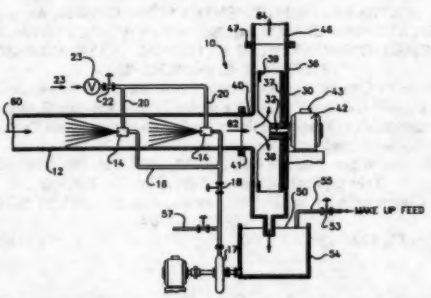
Filed Sep. 24, 1991, Ser. No. 764,869
Int. Cl.[5] C01B *21/00*
U.S. Cl. 423—235 **9 Claims**

1. A method of reducing the amount of nitrogen oxides produced by combustion in a jet engine of a supersonic aircraft having a combustor, said method comprising injecting a reducing agent into a downstream portion of the combustor of the jet engine perpendicularly to the primary direction of airflow through the combustor.

5,192,517
GAS REACTING METHOD

Donald R. Spink, Waterloo, Canada, assignor to Turbotak Inc., Waterloo, Canada

Continuation-in-part of Ser. No. 438,047, Nov. 30, 1989, which is a division of Ser. No. 243,720, Sep. 13, 1988, Pat. No. 4,963,329, which is a continuation-in-part of Ser. No. 20,953, Mar. 2, 1987, Pat. No. 4,865,817. This application Jan. 28, 1991, Ser. No. 646,197
Int. Cl.[5] C01B *17/00*
U.S. Cl. 423—243.08 **25 Claims**



1. A method for wet mass transferring at least one solute gas from a process gas stream into a reacting medium for said solute gas, comprising:

(a) providing an elongate conduit having an inlet thereto and an outlet therefrom and which is divided into a plurality of individual gas-atomized liquid contact zones;

(b) passing a gas stream containing at least one solute gas comprising sulfur dioxide into the inlet end of the elongate conduit;

(c) injecting a liquid reacting medium comprising an aqueous alkaline medium capable of adsorbing said at least one solute gas directly into said gas stream under an atomizing pressure of about 20 to about 100 psi from a plurality of dual-fluid spray nozzles coaxially disposed in said conduit one in each of the individual gas-atomized liquid contact zones so as to form a spray pattern from each of said nozzles filling homogeneously the cross-section of said conduit in each of the individual gas-atomized liquid contact zones and containing liquid droplets ranging in size from about 5 to about 100 microns, thereby to form a plurality of individual contact spray zones whereby mass transfer of said at least one solute gas into said reacting

medium is carried out in a very efficient way due to the large interfacial surface area for mass transfer, turbulent mixing and relatively long residence time generated therein;

(d) contacting the gas stream exiting each individual gas-atomized liquid contact zone with demisting means to agglomerate and remove entrained droplets from the gas stream before the gas stream passes to the next such zone and out of the outlet end; and

(e) discharging a clean gas stream from the outlet end.

5,192,518

METHOD FOR DESULFURIZING EXHAUST SMOKE

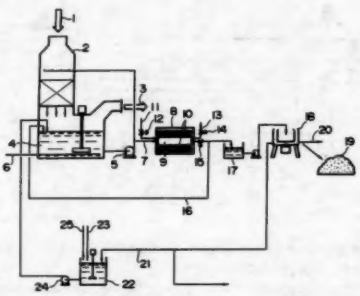
Naohiko Ukawa, Hiroshima; Susumu Okino, Kanonshin; Toru Takashina, Kanonshin; Masakazu Onizuka, Kanonshin, and Kenji Inoue, Kanonshin, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 16, 1991, Ser. No. 701,652

Claims priority, application Japan, Jun. 20, 1990, 2-159869

Int. Cl.[5] B01D *53/34, 47/06;* C01F *11/46*

U.S. Cl. 423—244.08 **2 Claims**



1. In a method for desulfurizing an exhaust gas containing aluminum and fluorine components which comprises the steps of leading said exhaust gas containing fly ash with aluminum components to a gas absorbing step, removing SO_2 and said fly ash from said exhaust gas by the use of an absorbing slurry solution to which calcium carbonate is fed as an absorbent in said gas absorbent step, and blowing air into said absorbing solution slurry circulating through said gas absorbing step to oxidize it and to thereby produce a gypsum, the improvement which comprises introducing a portion of said absorbing solution slurry containing said fly ash to a magnetic field to separate and recover said fly ash from said absorbing solution slurry, and then returning at least a portion of said absorbing solution slurry from which said fly ash has been separated to said gas absorbing step to promote dissolution of said calcium carbonate and wherein a portion of the absorbing solution slurry from which fly ash has been separated is treated to separate and recover gypsum of reduced fly ash content relative to that recovered without the magnetic field.

5,192,519

SUBSTITUTED STANNOSILICATES AND PREPARATION THEREOF

Edward W. Corcoran, Jr., Easton, Pa., and David E. W. Vaughan, Flemington, N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 486,471, Feb. 28, 1990, Pat. No. 5,110,571, which is a continuation-in-part of Ser. No. 91,657, Sep. 1, 1987, abandoned. This application Mar. 9, 1992, Ser. No. 848,596

Int. Cl.[5] C01B *33/34*

U.S. Cl. 423—713 **16 Claims**

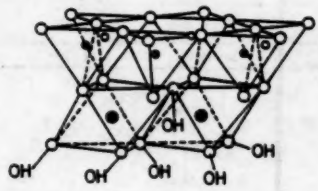
1. Crystalline substituted stannosilicate of the formula

$$xM_2O\text{-}S_nO_2\text{-}4\pm0.5(Si+T)O_2\text{-}yH_2O\text{-}zR$$

wherein M is a Group 1A metal, a Group IIA metal, whereupon M_2O becomes MO, or a quaternary amine; T is germanium, aluminum, gallium, zinc or mixtures thereof;

x is 1.5 to 4

y is 4 to 15



R is an amine; and

Z is 0 to 4

wherein the framework species comprises tin in octahedral coordination, Si and T in tetrahedral coordination, and oxygen.

5,192,520

SYNTHESIS OF ALUMINOSILICATE ZEOLITES OF FAUJASITE STRUCTURE

François Delprato, Riedisheim; Jean-Louis Guth, Brunstatt; Frédérique Hoffner, Saint-Amarin, and Catherine Zivkov, Narosse, all of France, assignors to Societe National Elf Aquitaine, Courbevoie, France

PCT No. PCT/FR90/00599, § 371 Date May 10, 1991, § 102(e) Date May 10, 1991, PCT Pub. No. WO91/04226, PCT Pub. Date Apr. 4, 1991

PCT Filed Sep. 11, 1990, Ser. No. 689,032

Claims priority, application France, Sep. 13, 1989, 89 11949

The portion of the term of this patent subsequent to Mar. 24, 2009, has been disclaimed.

Int. Cl.[5] C01B *33/34*

U.S. Cl. 423—702 **28 Claims**

1. A process for the preparation of a zeolite with an aluminosilicate skeleton belonging to the faujasite structural group and exhibiting an Si : Al ratio higher than 1, said process comprising:

(a) producing a reaction mixture which has a pH higher than 10 and contains water, a source of tetravalent silicon, a source of trivalent aluminum, a source of hydroxide ions in the form of a strong base and a structuring agent ST, so as to produce an aluminosilicate gel having a composition effective to permit its crystallization into a compound of the faujasite structural group;

(b) maintaining said gel at a temperature not exceeding 150° C. and at a pressure which is at least equal to the autogenous pressure of the gel for a sufficient period to effect crystallization of this gel into a precursor of said zeolite containing the structure agent ST in its cavities; and

(c) calcining said precursor to destroy said structuring agent and to produce said zeolite;

wherein the structuring agent ST consists of at least one compound chosen from the polyalkylene oxides corresponding to the formula

$$R\text{—}O\text{—}(C_mH_{2m-1}X\text{—}O)_n\text{—}R'$$

in which each of R and R', which are identical or different, denotes a hydrogen atom or a C_1–C_4 alkyl radical, X denotes a hydrogen atom or an —OH radical, m is equal to 2 or 3 and may be different from one unit to another and n is a number ranging from 1 to 12.

5,192,521

SYNTHESIS OF CRYSTALLINE SILICATE ZSM-12

Ahmad Moini, Lawrenceville, N.J., and Ernest W. Valyocsik, Yardley, Pa., assignors to Mobil Oil Corp., Fairfax, Va.

Filed Nov. 19, 1991, Ser. No. 794,274
Int. Cl.[5] B01J 29/28; C01B 33/28
U.S. Cl. 423—713 18 Claims

1. A method for synthesizing crystalline material exhibiting a characteristic X-ray diffraction pattern including d-spacing maxima values, in Angstroms, as follows:

Interplanar d-Spacing, (A)
11.9 ± 0.2
10.1 ± 0.2
4.76 ± 0.1
4.29 ± 0.08
3.98 ± 0.08
3.87 ± 0.07
3.49 ± 0.07
3.38 ± 0.07
3.20 ± 0.06
3.05 ± 0.05
2.54 ± 0.03

which comprises (i) preparing a mixture capable of forming said material, said mixture comprising sources of alkali or alkaline earth metal (M), an oxide of trivalent element (X), an oxide of tetravalent element (Y), water and decamethonium cation directing agent (R), and having a composition, in terms of mole ratios, within the following ranges:

YO_2/X_2O_3	30 to <100
H_2O/YO_2	10 to 80
OH^-/YO_2	0.05 to 1.0
M/YO_2	0.05 to 1.0
R/YO_2	0.02 to 0.80

(ii) maintaining said mixture under sufficient conditions until crystals of said material are formed; and (iii) recovering said crystalline material from step (ii), said recovered crystalline material containing said R.

5,192,522

ZEOLITE LZ-277 AND PROCESS FOR PREPARING SAME

Gary W. Skeels, Brewster, and Marilyn R. Sears, Ossining, both of N.Y., assignors to UOP, Des Plaines, Ill.

Filed Nov. 26, 1991, Ser. No. 798,382
Int. Cl.[5] C01B 33/28; B01J 29/06
U.S. Cl. 423—713 8 Claims

1. A synthetic microporous crystalline zeolite having an as-synthesized chemical composition on an anhydrous basis and expressed in terms of molar oxide ratios of

$$1.0\pm0.1\ Na_2O:Al_2O_3:3\text{–}15\ SiO_2$$

said zeolite having an x-ray powder diffraction pattern having at least the following d-spacings

d,A	Relative Intensity
11.77 ± 0.5	M
9.44 ± 0.2	M–S
6.84 ± 0.1	VS
4.93 ± 0.1	M–S
4.29 ± 0.1	M–S
3.42 ± 0.1	S
2.91 ± 0.1	VS
2.82 ± 0.1	M
2.59 ± 0.1	M

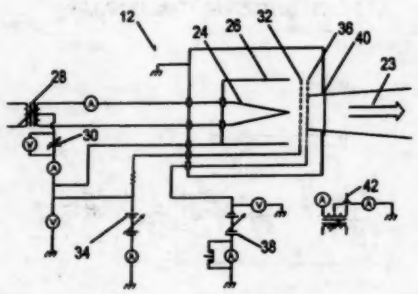
said as-synthesized zeolite having an adsorption capacity for SF_6 at 25° C. and 400 torr SF_6 pressure of less than 1 weight percent, the sodium cations of said zeolite being completely replaceable by ion-exchange without prior calcination or oxidative reaction involving said zeolite, with at least one cation species selected from the group consisting of H^+, NH_4^+, other alkali metals, alkaline earth metals and transition metals.

5,192,523

METHOD FOR FORMING DIAMONDLIKE CARBON COATING

Richard L. Wu, Xenia, and Peter P. Pronko, Kettering, both of Ohio, assignors to Universal Energy Systems, Inc., Dayton, Ohio

Continuation of Ser. No. 362,642, Jun. 7, 1989, abandoned. This application May 28, 1991, Ser. No. 707,319
Int. Cl.[5] C01B 31/04
U.S. Cl. 427—523 23 Claims



1. A method of forming a diamondlike carbon coating on a substrate comprising the steps of:

generating a carbon containing ionized beam having an ion kinetic energy in the range of substantially 500 to 1,000 eV; and

impinging said ionized beam onto the substrate.

5,192,524

CAPTOPRIL AS A CANCER CHEMOPREVENTIVE AGENT

William F. Ward; Agostino Molteni, both of Evanston; Chunghsin Ts'ao, Prospect Heights, and Joann M. Hinz, Chicago, all of Ill., assignors to Northwestern University, Evanston, Ill.

Filed Apr. 26, 1990, Ser. No. 514,589
Int. Cl.[5] A61K 31/00, 31/40
U.S. Cl. 424—1.1 4 Claims

1. A method of protecting against carcinogenesis induced by radiation therapy, said method including the steps of: irradiating a tissue with X-ray or gamma radiation; administering Captopril after irradiation in an amount effective for reducing the severity radiation induced normal tissue injury and decreasing the incidence of a secondary malignancy in the irradiated tissue.

5,192,525

HIGH AFFINITY TAMOXIFEN DERIVATIVES AND USES THEREOF

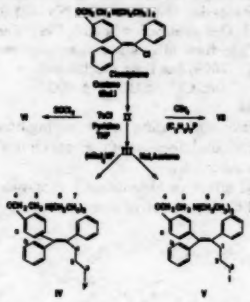
David Yang, Sugarland, and Sidney Wallace, Houston, both of Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation-in-part of Ser. No. 589,928, Oct. 1, 1990. This application Jun. 28, 1991, Ser. No. 722,322
Int. Cl.[5] A61K 49/02, 43/00
U.S. Cl. 424—1.1 10 Claims

1. A method for imaging estrogen receptors in an estrogen receptor-rich tissue of a patient comprising labeling the estro-

gen receptor with a radiolabeled lower alkyl-halo aliphatic chain substituted tamoxifen derivative comprising the steps of:

administering a sufficient quantity of the radiolabeled lower alkyl-halo aliphatic chain substituted tamoxifen derivative to an estrogen receptor rich tissue of the patient;



positioning the patient supine in a PET device;

performing an emission scan of the estrogen-receptor rich tissue, and obtaining a PET image of the tissue; and

evaluating the PET image for the presence or absence of focally increased uptake of the radiolabel in the tissue.

5,192,526

KIT FOR PREPARATION OF RHENIUM THERAPEUTIC AGENTS FOR BONE CANCER WITHOUT PURIFICATION

David W. Pipes, St. Louis, Mo., assignor to Mallinckrodt Medical, Inc., St. Louis, Mo.

Division of Ser. No. 346,411, May 2, 1989, Pat. No. 5,021,235. This application Mar. 21, 1991, Ser. No. 673,000

Int. Cl.[5] A61K *43/00*; C01G *47/00*

U.S. Cl. 424—1.1 **22 Claims**

1. A kit for forming a rhenium therapeutic agent comprising:

a bone-seeking ligand, a reductant and an anti-oxidant in an aqueous solution wherein the ligand is present in a concentration between about 0.01M and 0.15M, the reductant is present in a concentration between about 0.005M and 0.020M and the anti-oxidant is present at a concentration of between about 3×10^{-3}M and 3.5×10^{-2}M.

5,192,527

METHOD OF REVERSING LOCAL ANESTHESIA AND REAGENT SYSTEM THEREFOR

Glenn M. Abrahmsohn, 5055 Collins Ave., Miami, Fla. 33140

Continuation-in-part of Ser. No. 723,899, Jul. 1, 1991, abandoned. This application Dec. 23, 1991, Ser. No. 812,409

Int. Cl.[5] A61K *49/00*, *33/14*, *33/00*, *31/70*

U.S. Cl. 424—10 **15 Claims**

1. A reagent system for inducing and limiting the duration of local anesthesia comprising:

(a) a first container containing an anesthetic agent; and

(b) a second container containing an inorganic or organic salt reversing agent which when diluted with a fluid has a pH of at least about 7.

5,192,528

CORTICOSTEROID INHALATION TREATMENT METHOD

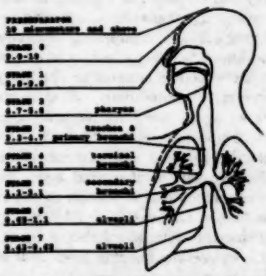
Ramachandran Radhakrishnan; Paul J. Mihalko, both of Fremont, and Robert M. Abra, San Francisco, all of Calif., assignors to Liposome Technology, Inc., Menlo Park, Calif.

Continuation-in-part of Ser. No. 22,937, Mar. 6, 1989, Pat. No. 4,895,719, which is a continuation-in-part of Ser. No. 737,221, May 22, 1985, abandoned. This application Dec. 1, 1989, Ser. No. 444,360

The portion of the term of this patent subsequent to Jan. 23, 2007, has been disclaimed.

Int. Cl.[5] A61K *9/12*, *31/47*

U.S. Cl. 424—45 **8 Claims**



1. A method for administering a therapeutic dose of a corticosteroid to the respiratory tract, for treatment of a condition or disease of the respiratory tract, comprising

(a) preparing an aqueous suspension of liposomes having sizes less than about 0.5 microns and containing the corticosteroid in entrapped form,

(b) aerosolizing the suspension in a pneumatic nebulizer under conditions which produce aerosol particle sizes in the range between about 0.4 and 6 microns, favoring aerosol particle deposition in the respiratory tract, and

(c) administering by inhalation, a quantity of the aerosol containing such therapeutic dosage of the corticosteroid in liposome-entrapped form.

5,192,529

LOW STRINGING TOOTHPASTE

Theodore H. Garlick, Jr., Litchfield, and Philip E. Miner, Newtown, both of Conn., assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Filed Jun. 2, 1992, Ser. No. 892,294

Int. Cl.[5] A61K *7/16*, *7/18*

U.S. Cl. 424—49 **10 Claims**

1. A low-stringiness and relatively nonweeping toothpaste compositions comprising:

(i) a polyol present in an effective amount to function as a humectant;

(ii) an abrasive present in an effective amount to polish teeth; and

(iii) a thickener system comprising:

(a) a low viscosity carboxymethyl cellulose gum having a viscosity ranging from about 50 to about 500 cps when 4% is placed in water at 25° C.; and

(b) a low viscosity hydroxyethyl cellulose gum having a viscosity ranging from about 75 to about 200 cps when 5% is placed in water at 25° C., the amount of the carboxymethyl cellulose and hydroxyethyl cellulose being present in a weight ratio of about 5:1 to about 1:5, said toothpaste having good cohesion and sufficient shortness of texture so as not to become significantly stringier upon additional shear, and upon extrusion retains body without stringiness, slump, separation, shrinking, collapse or weeping.

5,192,530

ANTIBACTERIAL ANTIPLAQUE ORAL COMPOSITION

Abdul Gaffar, Princeton; Nuran Nabi, No. Brunswick; John Affiitto, Brookside, all of N.J., and Orum Stringer, Yardley, Pa., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 398,606, Aug. 25, 1989, abandoned, which is a continuation-in-part of Ser. No. 291,712, Dec. 29, 1988, Pat. No. 4,894,220, and a continuation-in-part of Ser. No. 346,258, May 1, 1989, Pat. No. 5,043,154, each is a continuation-in-part of Ser. No. 8,901, Jan. 30, 1987, abandoned. This application Sep. 6, 1991, Ser. No. 754,887

Int. Cl.[5] A61K 7/16, 7/18

U.S. Cl. 424—52 20 Claims

1. In a method of preparing an oral composition dentifrice wherein delivery and retention of a plaque-inhibiting antibacterial agent is enhanced by attaching, adhering or bonding to oral tooth and gum surfaces, comprising an orally acceptable aqueous vehicle, about 5–30% by weight of a siliceous polishing agent and an effective amount in the range of about 0.01–5% by weight of substantially water insoluble noncationic antibacterial agent, the improvement comprising employing in said composition about 0.5–50% by weight of a solubilizing material for said antibacterial agent in amount sufficient to dissolve said antibacterial agent in saliva and permit delivery of said antibacterial agent to soft oral tissues at or near the gum line, and about 0.05–5% by weight of a water-soluble or swellable antibacterial-enhancing agent, which contains at least one delivery-enhancing functional group and at least one organic retention-enhancing group, which delivery-enhancing group enhances delivery of said antibacterial agent to oral tooth and gum surfaces and said retention-enhancing group enhances attachment, adherence or bonding of said antibacterial agent on oral tooth and gum surfaces.

5,192,531

ANTIBACTERIAL ANTIPLAQUE ORAL COMPOSITION

Abdul Gaffar, Princeton; Nuran Nabi, Brunswick; John Affiitto, Brookside, all of N.J.; Orum Stringer, Yardley, Pa., and Michael Prencipe, East Windsor, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 399,669, Aug. 25, 1989, abandoned, which is a continuation-in-part of Ser. No. 291,712, Dec. 29, 1988, Pat. No. 4,894,220, and Ser. No. 346,258, May 1, 1989, Pat. No. 5,043,154, which is a continuation of Ser. No. 8,901, Jan. 30, 1989, abandoned, said Ser. No. 291,712, is a continuation-in-part of Ser. No. 8,901, Jan. 30, 1989. This application Sep. 9, 1991, Ser. No. 758,345

Int. Cl.[5] A61K 7/16, 7/18

U.S. Cl. 424—52 23 Claims

1. In a method of preparing an oral composition dentifrice free of polyphosphate anticalculus agent in an effective anticalculus amount wherein delivery and retention of a plaque-inhibiting antibacterial agent is enhanced by attaching, adhering or bonding to oral tooth and gum surfaces, which composition comprises an orally acceptable aqueous vehicle, about 30–75% by weight of a dentally acceptable water-insoluble polishing agent, an effective amount in the range of about 0.01–5% by weight of substantially water insoluble noncationic antibacterial agent and at least one of a surface active agent or a flavoring oil, the improvement comprising employing in said composition about 0.05–4% by weight of a water-soluble or swellable antibacterial-enhancing agent, which contains at least one delivery-enhancing functional group and at least one organic retention-enhancing group, wherein said delivery-enhancing group enhances delivery of said antibacterial agent to oral tooth and gum surfaces and said retention-enhancing group enhances attachment, adherence or bonding of surfaces.

5,192,532

ORAL COMPOSITIONS CONTAINING MONOPEROXY ACIDS

Christopher B. Gusy, and Joanna P. Hinton, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 568,292, Aug. 16, 1990, abandoned, which is a continuation-in-part of Ser. No. 421,039, Oct. 13, 1989, abandoned. This application Aug. 5, 1991, Ser. No. 742,467

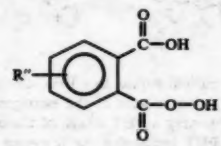
The portion of the term of this patent subsequent to Dec. 29, 2004, has been disclaimed.

Int. Cl.[5] A61K 7/16, 7/22

U.S. Cl. 424—53 13 Claims

1. A composition for treating or preventing dental plaque, or gingival or periodontal diseases of the oral cavity in humans or lower animals comprising:

(a) a safe and effective amount of a monoperoxyphthalate compound having the structure:



or the pharmaceutically acceptable salts or esters thereof, wherein R″ is one or more substituents compatible with the peroxy acid functionality of the aromatic ring; and

(b) a suitable carrier;

wherein said composition has a pH of about 3.0 to about 5.0 and contains a mono-, di- or tricarboxylic acid buffering agent.

5,192,533

NONIRRITATING ANTITARTAR AND ANTIPLAQUE ORAL COMPOSITIONS

David L. Elliott, Hawthorne, and Esther Patrick, Ridgefield, both of N.J., assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Filed Mar. 25, 1992, Ser. No. 858,374

The portion of the term of this patent subsequent to Apr. 30, 2008, has been disclaimed.

Int. Cl.[5] A61K 7/16, 7/22

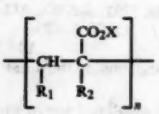
U.S. Cl. 424—54 17 Claims

1. An oral composition comprising:

(i) a polymer present in an effective amount to control build-up of tartar, said polymer having the formula I:

(I)

wherein A is a random polymeric residue comprising at least one unit of structure II.



(II)

and at least one unit of structure III, different from a unit of structure II,

(III)

and B is hydrogen or a residue A; m and an are integers sufficient to provide polymer of weight averaged molecular weight ranging from about 400 to about 5000; m and n in residue A may each be the same or different from respective m and n in residue B; R is an —OX, where X is selected from the group consisting of hydrogen, alkali metal, alkaline earth metal, transition metal ammonium, alkyl amine, alkanolammonium residues and mixtures thereof; R_1, R_2, R_3 and R_4 are hydrogen, methyl, ethyl radicals or combinations thereof; and

(ii) an effective amount of antibacterial agent for destroying microorganisms selected from the group consisting of diphenyl ethers, bis-biguanides, halogenated carbanilides and salicylamides.

5,192,534

COMPOSITION FOR INDUCING AND STIMULATING HAIR GROWTH AND/OR RETARDING ITS LOSS, BASED ON PYRIMIDINE DERIVATIVES AND SUNSCREENS

Jean F. Grollier, and Isabelle Richoux, both of Paris, France, assignors to L'Oreal, Paris, France

Continuation of Ser. No. 459,128, Dec. 29, 1989, abandoned. This application Feb. 13, 1992, Ser. No. 834,977

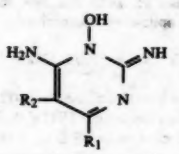
Claims priority, application France, Dec. 30, 1988, 88 17466

Int. Cl.[5] A61K *7/42*

U.S. Cl. 424—59 **31 Claims**

1. A composition for inducing and stimulating hair growth and for decreasing hair loss, said composition comprising, in a physiologically acceptable aqueous or anhydrous medium:

(a) at least an effective concentration of at least one pyrimidine derivative having the formula:

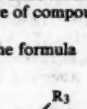


(I)

or of an acid addition salt thereof with a physiologically acceptable acid; and

(b) a sufficient concentration of at least one compound or mixture of compounds that screens out ultraviolet (UV) radiation to increase the solubility of said pyrimidine derivative in said medium compared to the solubility of the pyrimidine in the same medium in the absence of said compound or mixture of compounds that screens out UV radiation, wherein:

R_1 is a group having the formula



R_3 and R_4 are either selected from the group consisting of hydrogen, lower alkyl, alkenyl, alkylaryl and cycloalkyl, in which the alkyl portions are lower alkyl, or R_3 and R_4 with the nitrogen to which they are each bound form a heterocyclic group, which is unsubstituted or is substituted on the carbon atoms with one to three lower alkyl, hydroxy, or alkoxy groups, and which is selected from the group consisting of aziridinyl, azetidinyl, pyrrolidinyl, piperidino, hexahydroazepinyl, heptamethyleniminio, octamethyleneimino, morpholino and 4-(lower alkyl) piperazinyl;

R_2 is selected from the group consisting of hydrogen, lower alkyl, alkenyl, alkoxyalkyl, cycloalkyl, aryl, alkylaryl, arylalkyl, alkylarylalkyl, alkoxyarylalkyl and haloarylalkyl, in which the alkyl portions are lower alkyl radicals; and

said effective concentration of pyrimidine derivative is effective for inducing and stimulating the growth of hair and reducing its loss;

said UV screening compound is selected from the group consisting of 2-hydroxy-4-methoxybenzophenone, 2-ethylhexyl paradimethylaminobenzoate, pentyl paradimethylaminobenzoate, 2-ethylhexyl para-methoxycinnamate, 4-(1,1-dimethylethyl)-4'-methoxydibenzolymethane, N-(2-ethylhexyl)-3-[(3'-methoxy-4'-n-butoxy)benzylidene]-10-camphorsulphonamide, 3-(4-methylbenzylidene)camphor, homomenthyl salicylate, 2-ethylhexyl salicylate, para-aminobenzoic acid and 2-hydroxy-4-methoxybenzophenone-5-sulphonic acid;

said aqueous medium consists essentially of water or a mixture of water and a physiologically acceptable solvent; and

said anhydrous medium is a physiologically acceptable solvent or mixture of solvents that contains less than 1% water.

5,192,535

OPHTHALMIC SUSPENSIONS

Jeffrey P. Davis, Madison, Wis.; Santosh K. Chandrasekaran, Moraga, Calif.; Yansheng Su, Shandong, China; Roy D. Archibald, Fremont, Calif., and Joseph R. Robinson, Madison, Wis., assignors to InSite Vision Incorporated, Alameda, Calif.

Continuation-in-part of Ser. No. 537,005, Jun. 12, 1990, abandoned, which is a continuation of Ser. No. 301,114, Jan. 25, 1989, abandoned, which is a continuation-in-part of Ser. No. 153,762, Feb. 8, 1988, abandoned. This application Jun. 27, 1990, Ser. No. 544,518

Int. Cl.[5] A61F *2/14*; A61K *9/64, 9/70, 31/765*

U.S. Cl. 424—78.04 **35 Claims**

1. A sustained release topical ophthalmic medicament delivery system, comprising:

an aqueous suspension at a pH of from about 3 to about 6.5 and an osmotic pressure of from about 10 to about 400 mOsM containing from about 0.1% to about 6.5% by weight, based on the total weight of the suspension, of a carboxyl-containing polymer prepared by polymerizing one or more carboxyl-containing monoethylenically unsaturated monomers and less than about 5% by weight of a crosslinking agent, such weight percentages of monomers being based on the total weight of monomers polymerized,

said suspension having a viscosity of from about 1,000 to about 30,000 centipoises and being administrable to the eye in drop form,

said polymer having average particle size of not more than about 50 μm in equivalent spherical diameter and being lightly cross-linked such that although the suspension is administrable in drop form, upon contact of the lower pH suspension with the higher pH tear fluid of the eye, the suspension is rapidly gellable to a substantially greater viscosity than the viscosity of the suspension as originally administered in drop form,

whereby the resulting more viscous gel can remain in the eye for sustained release of a medicament contained therein.

5,192,536

METHOD AND COMPOSITION FOR COATING A WOUND WITH POLYETHER POLYURETHANE

Carl A. Huprich, 22333 County Rd. 62 North, Robertsdale, Ala. 36567

Continuation-in-part of Ser. No. 605,105, Oct. 26, 1990, abandoned. This application Nov. 19, 1991, Ser. No. 794,680

Int. Cl.[5] A61K *9/70*; A61L *15/26*, *25/00*; A61F *13/02*

U.S. Cl. 424—78.08 7 Claims

1. A method for coating a wound comprising the steps of:

(a) coating a wound with a mixture consisting of polyether polyurethane resin and tetrahydrofuran

(b) allowing said mixture to dry thereafter forming a nonfibrous film whereby healing is promoted.

5,192,537

METHOD OF TREATING RENAL CELL CARCINOMA USING ACTIVATED MONONUCLEAR CELLS, RENAL TUMOR ANTIGEN AND CIMETIDINE

Michael E. Osband, Brookline, Mass., assignor to Cellcor Inc., Newton, Mass.

Continuation of Ser. No. 681,668, Apr. 8, 1991, abandoned, which is a continuation of Ser. No. 405,044, Sep. 11, 1989, abandoned, which is a continuation of Ser. No. 903,489, Sep. 4, 1986, abandoned, which is a continuation-in-part of Ser. No. 595,081, Mar. 30, 1984, abandoned. This application Aug. 19, 1991, Ser. No. 747,484

Int. Cl.[5] A61K *45/05*, *39/00*; A01N *63/00*, *43/24*

U.S. Cl. 424—85.2 5 Claims

1. A method of treating renal cell carcinoma comprising administering to a patient having same an effective, renal cell carcinoma-inhibiting amount of the immunoreactive, sensitized cells and administering to the patient an amount of cimetidine effective to inhibit the patient's suppresor cells

wherein said immunoreactive, sensitized cells are prepared by a process comprising the steps of:

(a) collecting mononuclear cells from the blood of an individual patient afflicted with renal cell carcinoma;

(b) incubating the mononuclear cells with an effective amount of an H2 receptor antagonist and removing or chemically inactivating the suppressor T-cells from the mononuclear cells;

(c) suspending the mononuclear cells of step (b) in culture medium and admixing the suspended mononuclear cells with autologous blood serum, a non-specific lymphocyte activator and an effective amount of an extract of the patient's tumor containing antigen specific to renal cell carcinoma;

(d) culturing the admixture of step (c) under hyperthermic conditions of about 38° C. to about 41° C. in the presence of an amount of cimetidine effective to reduce suppressor cell activity for a period of time sufficient to activate and sensitize the mononuclear cells in vitro against the patient's renal cell carcinoma; and

(e) irradiating the immunoreactive, sensitized cells with an effective amount of gamma radiation to re-deplete any radiosensitive suppressor cells that may be present in the culture of activated and immunized mononuclear cells, thereby providing immunoreactive, sensitized cells specific to the patient's renal cell carcinoma.

5,192,538

STABLE FORMS OF ANTIGENIC *TAENIA OVIS* POLYPEPTIDES

Gavin B. L. Harrison; Robert P. Dempster, both of Upper Hutt, New Zealand; Michael D. Rickard, Werribee; Marshall W. Lightowlers, Victoria, both of Australia; David D. Heath, Paremata; Stephen B. Lawrence, Upper Hutt, both of New Zealand, and Kim L. O'Hoy, Pascoe Vale, Australia, assignors to Pitman-Moore New Zealand Limited, Upper Hutt, New Zealand; The University of Melbourne, Melbourne, Australia and Her Majesty The Queen in right of New Zealand through the Ministry of Agriculture & Fisheries, Wellington, New Zealand

Continuation of Ser. No. 470,691, Jan. 26, 1990, abandoned, which is a continuation-in-part of Ser. No. 349,723, May 9, 1989. This application Jan. 3, 1992, Ser. No. 818,453

Claims priority, application New Zealand, May 12, 1988, 224597; Jun. 1, 1988, 224862

Int. Cl.[5] A61K *39/002*

U.S. Cl. 424—88 5 Claims

1. A stable antigenic peptide essentially free from naturally occurring admixtures, comprising a fragment of a *T.ovis* oncosphere antigen which runs as a 47–52 kD doublet on SDS-PAGE, which fragment:

(a) has a molecular weight of from about 23 kD to about 24 kD; and

(b) generates a protective immunological response to *T.ovis* infection in a ruminant;

or a stable subfragment of said 23–24 kD fragment which generates a protective immunological response *T.ovis* infection.

5,192,539

INFECTIOUS BURSAL DISEASE VIRUS PRODUCTION IN CONTINUOUS CELL LINES

Piet Van Der Marel, Venray, and Pieter G. Mooren, Kronenberg, both of Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

Filed May 11, 1989, Ser. No. 350,656

Claims priority, application Netherlands, Jul. 21, 1988, 88 01843

Int. Cl.[5] A61K *39/12*; C12N *7/00*

U.S. Cl. 424—89 11 Claims

1. A line infectious bursal disease virus (IBDV) vaccine free of avian cell material comprising IBDV derived from a mammalian cell line infected with IBDV, wherein said vaccine induces a protective immune response when administered to poultry in a medium selected from the group consisting of eye drops, nose drops, drinking water and sprays.

5,192,540

HAEMOPHILUS INFLUENZAE TYPE B OXIDIZED POLYSACCHARIDE-OUTER MEMBRANE PROTEIN CONJUGATE VACCINE

Joseph S. C. Kuo, Tappan, and James E. Bristol, Pearl River, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 183,206, Apr. 19, 1988, abandoned. This application Feb. 21, 1989, Ser. No. 311,873

Int. Cl.[5] A61K *39/02*; C07K *3/00*

U.S. Cl. 424—92 7 Claims

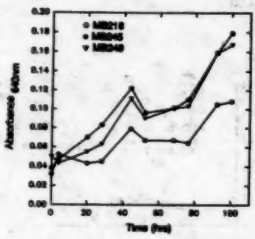
1. An immunogenic polysaccharide-protein conjugate comprising the reductive amination product of (a) an oxidized polyribosyl-ribitol-phosphate polysaccharide fragment derived from the capsular polysaccharide of *Haemophilus influenzae* type b, and (b) the outer membrane protein of *Haemophilus influenzae* type b having a molecular weight of, about, 38,000 daltons or 40,000 daltons as determined by SDS-PAGE.

5,192,541

WEED KILLING *XANTHOMONAS CAMPESTRIS*

Steven D. Savage, San Marcos, and Robert A. Haygood, San Diego, both of Calif., assignors to Mycogen Corporation, San Diego, Calif.

Filed Aug. 30, 1991, Ser. No. 753,270
Int. Cl.[5] A01N *63/00*; A61K *37/00*; C12N *1/12, 1/20*
U.S. Cl. 424—93 D 5 Claims



1. A biologically pure culture of a microorganism selected from the group consisting of microbes having all the identifying characteristics of the following isolates: MB245 (NRRL B-18855), MB249 (NRRL B-18857), and MB276 (NRRL B-18861), (NRRL B-18863).

5,192,542

TISSUE SEALANT PRODUCT AND METHOD

James J. Hubbs, 1939 E. Apollo, Tempe, Ariz. 85254, and Jonathan Hubbs, 3131 E. Mulberry, Phoenix, Ariz. 85016

Filed Feb. 2, 1990, Ser. No. 473,927
Int. Cl.[5] A61K *35/78*; A01N *1/00*
U.S. Cl. 424—195.1 3 Claims

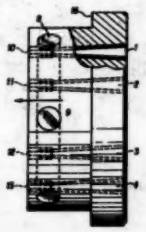
1. A method of treating tissue of a corpse in an embalming procedure comprising applying a sealant to the area to be treated consisting of the dried and ground plants selected from the group consisting of: Plantago Insularis; Plantago Lanceolata; Plantago Ovata; Plantago Fastigium; and Spanish Psyllium to form a seal in the area bonded to tissue to minimize fluid leakage and escape of odor.

5,192,543

HEATED DIE PLATE FOR MAKING EXTRUDED PASTA SHAPES

Scot A. Irvin, Baldwinsville; Carleton G. Merritt, Phoenix, and Raymond G. Kowalski, Weedsport, all of N.Y., assignors to Borden, Inc., Columbus, Ohio

Division of Ser. No. 539,185, Jun. 18, 1990, Pat. No. 5,089,284. This application Aug. 28, 1991, Ser. No. 751,057
Int. Cl.[5] B29C *47/86, 47/94*
U.S. Cl. 425—378.1 7 Claims



1. An extrusion die plate for forming shaped alimentary pastes, said plate being formed with a plurality of orifices, each defined respectively by a surface;

wherein said die plate comprises means for heating said plate;

wherein a portion of said surface of each of said orifices of said die plate has a coating thereon and wherein another portion of said surface of each of said orifices is uncoated, such that heat transfer to a paste being extruded through said orifices is substantially inhibited within said portion of said surfaces of each said orifices having the coating and heating of said paste occurs substantially only in the uncoated portion of said surface of each of said orifices.

5,192,544

COSMETIC OR PHARMACEUTICAL COMPOSITION FOR TOPICAL APPLICATION CONTAINING AT LEAST ONE RETINOID DERIVATIVE AND AT LEAST ONE PYRIMIDINE DERIVATIVE, ITS USE AS A MEDICINAL PRODUCT AND CORRESPONDING TREATMENT PROCESS

Jean-François Grollier, Paris; Georges Rosenbaum, Asnieres, and Isabelle Richoux, Paris, all of France, assignors to L'Oreal, Paris, France

Filed Oct. 11, 1990, Ser. No. 595,674
Claims priority, application France, Oct. 12, 1989, 89 13358
The portion of the term of this patent subsequent to Nov. 6, 2007, has been disclaimed.
Int. Cl.[5] A61K *7/06, 9/10, 31/505, 31/44*
U.S. Cl. 424—401 21 Claims

1. Cosmetic or pharmaceutical composition for topical application containing, in combination, at least one retinoid derivative and at least one pyrimidine derivative, characterized in that it consists of a dispersion of vesicles of at least one ionic and/or nonionic amphiphilic lipid, the vesicles being bounded by one or more lipid lamella(e) in a physiologically acceptable aqueous dispersion phase D, the retinoid derivative(s) being in the lipid lamellae of the vesicles whereas the pyrimidine derivative(s) is (or are) in the form of a solution or, partially or totally, in the form of a suspension in the aqueous phase D.

5,192,545

SILICA GELS FOR CONTROLLING INSECT PESTS

Yoshito Nakashima, Miyazaki, Japan, assignor to Fuji-Davison Chemical Ltd., Aichi, Japan

Division of Ser. No. 666,563, Mar. 8, 1991, Pat. No. 5,135,750, which is a continuation of Ser. No. 326,674, Mar. 21, 1989, abandoned. This application Dec. 9, 1991, Ser. No. 804,022
Claims priority, application Japan, Apr. 8, 1988, 63-87649
Int. Cl.[5] A01N *25/34*
U.S. Cl. 424—405 4 Claims

1. A method for killing insects by exposing insects to an insect-killing effective amount of a biotically toxic composition, consisting essentially of a relative humidity controlling effective amount of silica gel having a minimum particle size of 350 μm, and about 0.05% to about 5% by weight silica particles having a maximum diameter of about 50 μm.

5,192,546

SYNERGISTIC PESTICIDAL COMPOSITIONS

Kenneth D. Abercrombie, Sanger, Calif., assignor to Mycogen Corporation, San Diego, Calif.

Filed Jan. 15, 1991, Ser. No. 641,419
Int. Cl.[5] A01N *25/00*
U.S. Cl. 424—405 30 Claims

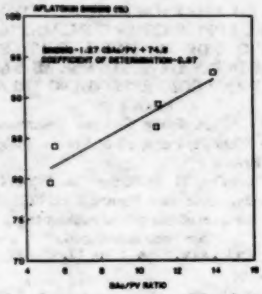
1. A composition for the control of a pest, said composition comprising a first ingredient which is a monocarboxylic acid having about seven to about twenty carbon atoms, or a salt thereof, or a mixture of said monocarboxylic acids or salts thereof, and a second ingredient which is an avermectin, ivermectin, or milbemycin wherein said first ingredient is present at a concentration of at least about 0.2%, and said second ingredient is present in a concentration between about 0.25 to about 3 ppm.

5,192,547

ANIMAL FEED CONTAINING SELECTED MONTMORILLONITE CLAY AS ADDITIVE AND METHOD FOR SELECTING THE CLAY

Dennis R. Taylor, Houston, Tex., assignor to Engelhard Corporation, Iselin, N.J.

Filed Oct. 1, 1990, Ser. No. 590,900
Int. Cl.[5] A23K *1/18*
U.S. Cl. 424—438 5 Claims



1. A dry solid animal feed composition in which biodegradable feed is contaminated with a mycotoxin and is admixed with of a calcium montmorillonite in an amount ranging from about 0.05 to 1.5 weight percent of the composition selected to have a ratio of surface acidity divided by porosity greater than 6, wherein surface acidity of said calcium montmorillonite is for sites whose pKa values fall in the range of 5.0–6.8 and porosity is for pores who diameters fall in the range of 50–600 Angstrom units.

5,192,548

DEVICE

David J. Velasquez; Peter D. Hodson, and Clyde D. Calhoun, all of St. Paul, Minn., assignors to Riker Laboratoires, Inc., St. Paul, Minn.

Filed Apr. 30, 1990, Ser. No. 516,327
Int. Cl.[5] A61F *13/00*
U.S. Cl. 424—443 22 Claims

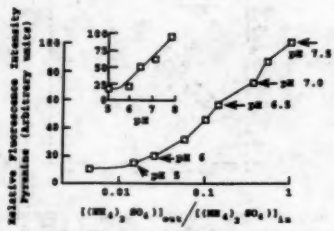
1. A flexible sheet material comprising a plurality of discrete depressions in at least one surface thereof, each of said depressions having a depth of about 5 to 500 μm, but less than the thickness of said sheet material, and an opening at the surface of said sheet of about 10 to 500 μm across, a substantial number of said depressions being at least partially filled with micronized medicament, and the area of said surface between said depressions being substantially free of said micronized medicament, wherein said medicament may be aerosolized from said depressions.

5,192,549

METHOD OF AMPHIPHATIC DRUG LOADING IN LIPOSOMES BY PH GRADIENT

Yechezkel Barenolz, Israel, and Gilad Haran, both of Jerusalem, Israel, assignors to Yissum Research Development Company of the Hebrew University of Jerusalem, Israel

Continuation-in-part of Ser. No. 250,687, Sep. 29, 1988, abandoned. This application Sep. 27, 1989, Ser. No. 413,037
Int. Cl.[5] A61K *37/22*
U.S. Cl. 424—450 2 Claims



1. A method for loading into liposomes, an amphiphatic compound which exists in a uncharged, deprotonated form or a charged, protonated form, said method comprising:

(a) preparing a suspension of liposomes having a greater concentration of ammonium ions inside the liposomes than outside the liposomes, thereby to establish a pH gradient from inside to outside the liposomes,

(b) adding the amphipathic compound to the liposome suspension, and

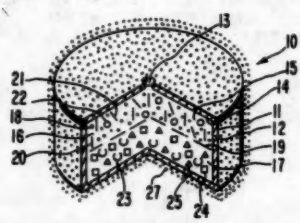
(c) by said adding, achieving uptake of the said compound into the liposomes, to a final concentration of said compound within the liposomes which is greater than that outside the liposomes.

5,192,550

DOSAGE FORM FOR TREATING CENTRAL NERVOUS SYSTEM DISORDERS

David E. Edgren, El Granada; Howard A. Carpenter, Palo Alto; Gurdish K. Bhatti, Fremont, and Atul D. Ayer, Palo Alto, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 717,293, Jun. 17, 1991, which is a continuation of Ser. No. 520,295, May 7, 1990. This application Mar. 5, 1992, Ser. No. 846,097
Int. Cl.[5] A61K *9/24*
U.S. Cl. 424—473 14 Claims



1. A dosage form for administering a drug for treating central nervous system disorders, wherein the dosage form comprises:

(a) a wall that surrounds;

(b) a compartment;

(c) at least one exit in the wall that connects the exterior with the interior of the dosage form for delivering a dispensable drug formulation from the compartment;

(d) a second composition in the compartment comprising up to 85 wt % of an osmopolymer, up to 45 wt % of an

osmagent, up to 3 wt % of a coloring agent, up to 3 wt % of a flow-promoting agent, and up to 3 wt % of a lubricant, which second composition comprises 100 wt % in the presence of fluid that enters the compartment exhibits a 2 to 60 fold increase in dimensions; and wherein the dosage form is characterized by:

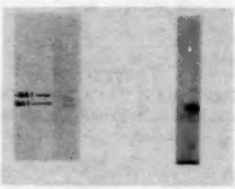
(e) a first composition comprising 100 wt % in the compartment that defines a first laminar arrangement with the second composition, said first composition comprising a pharmaceutical drug carrier and 100 nanograms to 700 milligrams of drug granules present in the first composition substantially-free of adverse effects on the drug, and wherein the drug is indicated for treating central nervous system disorders comprising the occurrence of sudden and transitory episodes of abnormal motor, sensory and autonomic origin for administration to a patient having the central nervous system disorders.

5,192,551

NEUTRAL GLYCOLIPID AS AN ADSORBENT FOR ENTERIC VIRAL PATHOGENS

Rodney E. Willoughby, Jr., and Robert H. Yolken, both of Baltimore, Md., assignors to Johns Hopkins University, Baltimore, Md.

Filed May 2, 1989, Ser. No. 346,450
Int. Cl.[5] A61K *9/16, 31/74*
U.S. Cl. 424—489 **8 Claims**



1. A method of treating a human or other mammal to prevent or diminish enteric viral infections comprising

orally administering gangliotetraosylceramide to said human or other mammal to bind to enteric viruses in an amount effective to prevent or diminish enteric viral infections.

5,192,552

PROCESS FOR PREPARING MICROCAPSULES PROVIDING THE RAPID RELEASE OF A DRUG AS ACTIVE INGREDIENT

Pál Fekete; Dénes Bezzegh; Katalin Zukovics; Zsuzsanna Jámbor, and János Tombor, all of Budapest, Hungary, assignors to EGIS Gyogyszergyar, Hungary

Filed Dec. 29, 1989, Ser. No. 458,600
Claims priority, application Hungary, Dec. 30, 1988, 6662/88
Int. Cl.[5] A61K *9/50*; B01J *13/20, 13/06*
U.S. Cl. 424—4.95 **17 Claims**

1. A process for preparing ethylcellulose-coated microcapsules, comprising mixing ethylcellulose, a dialkyl sulfosuccinate surface active agent soluble in cyclohexane and a cyclohexane insoluble drug to be microencapsulated together in cyclohexane at room temperature, said drug having a particle size of at most 1000 μm, heating the system to about 80° C. and stirring for 30 to 120 minutes in order to dissolve the ethylcellulose, cooling the system down to room temperature under constant stirring, thereby forming a microcapsule suspension, removing microcapsules formed by filtration and drying them, the proportion of ethyl cellulose to drug being 1:30 to 1:15, and the amount of dialkyl sulfosuccinate surface active agent being 0.001 to 1.0% by weight/volume in relation to the cyclohexane.

5,192,553

ISOLATION AND PRESERVATION OF FETAL AND NEONATAL HEMATOPOIETIC STEM AND PROGENITOR CELLS OF THE BLOOD AND METHODS OF THERAPEUTIC USE

Edward A. Boyse, Tucson, Ariz.; Hal E. Broxmeyer, Indianapolis, Ind., and Gordon W. Douglas, New York, N.Y., assignors to Biocyte Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 119,746, Nov. 12, 1987, Pat. No. 5,004,681. This application Nov. 10, 1988, Ser. No. 269,926
Int. Cl.[5] A61K *35/50, 35/14*
U.S. Cl. 424—529 **64 Claims**

1. A method for obtaining human neonatal for fetal hematopoietic stem or progenitor cells comprising:

(a) isolating human neonatal or fetal blood components containing hematopoietic stem or progenitor cells;

(b) cryopreserving the blood components; and

(c) thawing the blood components,

such that the stem or progenitor cells are viable.

13. A method for hematopoietic or immune reconstitution of a human comprising:

(a) isolating human neonatal or fetal blood components containing hematopoietic stem cells;

(b) cryopreserving the blood components;

(c) thawing the blood components; and

(d) introducing the blood components into a suitable human host,

such that the hematopoietic stem cells are viable and can proliferate within the host.

47. A method for hematopoietic or immune reconstitution of a human comprising:

(a) isolating human neonatal or fetal blood components containing hematopoietic stem and progenitor cells;

(b) cryopreserving the blood components;

(c) thawing the blood components; and

(d) introducing the blood components into a suitable human host,

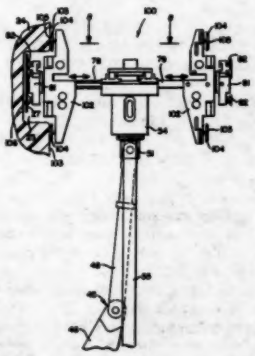
such that the hematopoietic stem and progenitor cells are viable and can proliferate within the host.

5,192,554

LABEL DISPENSER FOR BLOW MOLDING MACHINES

Peter P. Savich, Longmeadow, Mass., assignor to First Brands Corporation, Danbury, Conn.

Filed Jan. 15, 1991, Ser. No. 641,219
Int. Cl.[5] B29C *49/24*
U.S. Cl. 425—504 **27 Claims**



1. A label carrier for an in-mold label dispenser having a dispensing head including means for slidably mounting one end of said label carrier thereto, said label carrier including at its opposite end a vacuum head having vacuum cups for depositing a label within the mold cavity of an open mold and an

adjustable stop assembly mounted to said label carrier at a point behind said vacuum head and having elongated arms extending transversely in a direction perpendicular to the direction of movement of said label carrier, said elongated arms having adjustable contact members positioned to make contact with a surface portion of said mold to stop movement of said label carrier after said vacuum cup has moved a predetermined distance within said mold cavity.

5,192,555

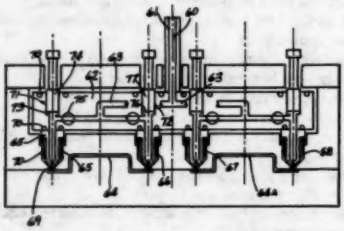
APPARATUS FOR MOLDING PLASTIC ARTICLES

Robin Arnott, Alliston, Canada, assignor to Husky Injection Molding Systems Ltd., Bolton, Canada

Continuation-in-part of Ser. No. 480,866, Feb. 16, 1990, Pat. No. 5,069,840. This application Jul. 22, 1991, Ser. No. 734,148

Int. Cl.[5] B29C *45/02*

U.S. Cl. 425—544 **9 Claims**



1. Apparatus for molding plastic articles which comprises:

at least one mold cavity;

at least two nozzles communicating with said mold cavity for feeding molten plastic to said mold cavity;

a hot runner system communicating with said nozzles for feeding molten plastic to said nozzles;

feeding means for feeding said molten plastic to said hot runner system;

valve means in the hot runner system operative to permit flow of said molten plastic to said nozzles from said feeding means and to shut-off the flow of said molten plastic to said nozzles from said feeding means;

at least one shooting pot communicating with each nozzle and with the hot runner system, said communication being downstream of said valve means; and

means for alternately feeding said molten plastic from said at least one shooting pot to each nozzle, whereby the molten plastic is oscillated in the mold cavity.

5,192,556

PLASTIC MOLDING APPARATUS FOR EQUALIZING FLOW PRESSURE AND FLOW VELOCITY OF PLASTIC MELT

Harald Schmidt, Georgetown, Canada, assignor to Husky Injection Molding Systems Ltd., Bolton, Canada

Filed Oct. 3, 1991, Ser. No. 770,246

Int. Cl.[5] B29C *45/23*

U.S. Cl. 425—549 **9 Claims**

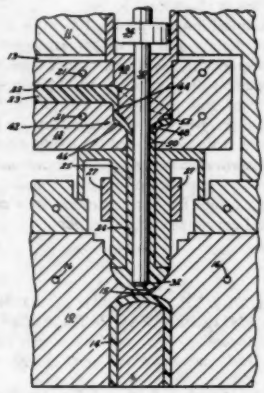
1. A plastic molding apparatus for delivering a melt stream of moldable plastic material under pressure through a flow passageway and into a mold cavity, which comprises:

a distributing plate including a distribution channel for conveying a plastic melt;

a nozzle including a nozzle channel communicating with said distribution channel;

a mold cavity communicating with said nozzle channel;

connecting channel means connecting said distribution channel with said nozzle channel, said connecting channel means including a flow entry portion, a reservoir portion and a flow restriction portion, wherein the melt flows from the distribution channel to the flow entry portion, to the reservoir portion, to the flow restriction portion, and to the nozzle channel, and wherein the flow entry portion comprises a varying height channel that distributes the melt substantially equally and wherein the reservoir portion has a larger capacity than the flow restriction portion



so that the flow restriction portion holds back the melt flow from the reservoir portion;

whereby said connecting channel means substantially equalizes flow pressure and flow velocity of the plastic melt to the nozzle channel.

5,192,557

CLAMPING APPARATUS FOR MOLDING MACHINE

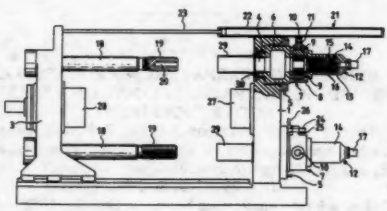
Hisakazu Hirata; Kazuyuki Okubo, and Motomi Kitamura, all of Nagano, Japan, assignors to Nissei Jushi Kogyo K.K., Nagano, Japan

Filed Jul. 17, 1991, Ser. No. 731,849

Claims priority, application Japan, Jul. 27, 1990, 2-200593; Aug. 31, 1990, 2-230273; Aug. 31, 1990, 2-230274; Aug. 31, 1990, 2-230275; Aug. 31, 1990, 2-230276

Int. Cl.[5] B29C *45/64*

U.S. Cl. 425—589 **5 Claims**



1. A clamping apparatus for a molding machine, comprising:

a fixed board disposed on a base;

a movable board disposed on said base, said movable board being movable relative to said fixed board;

a plurality of mold clamping cylinder devices each having a mold clamping piston with a tie bar insertion hole, said plurality of mold clamping cylinder devices being provided in predetermined positions of one of said fixed board and said movable board;

a plurality of tie bard disposed on the other of said fixed board and said movable board, each insertable into a respective one of said insertion holes;

a plurality of half nut connection devices respectively connected to said mold clamping pistons for clamping said tie bars to said one board;

a mold opening/closing cylinder device for moving said movable board relative to said fixed board; and

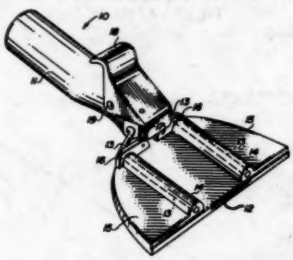
a mold thickness adjustment device disposed at an outer position of each of said connection devices for controlling the axial position of each of said tie bars with respect to each of said connection devices during said clamping, said mold thickness adjustment device having a stopper for containing an end of each of the bars, said stopper being movable in the axial direction thereof.

5,192,558

OUTSIDE-CORNER PLASTERING TOOL

Jesse R. Sparrow, Phoenix, and John A. Estep, Laveen, both of Ariz., assignors to Don Hasselmann and Kenneth Oakes, both of Phoenix, Ariz.

Filed Feb. 10, 1992, Ser. No. 833,293
Int. Cl.[5] B05C 17/10
U.S. Cl. 425—87 3 Claims



1. A tool for applying a bead of cementatious material where two surfaces meet at a junction having an exterior angle of 180° or greater, said tool comprising:

a flexible blade conformable to the junction of two surfaces for carrying cementatious material to the junction to leave a bead of cementatious material on the junction;

means coupled to said blade for dynamically folding said blade to further conform said blade to the two surfaces which form the junction to which a bead of cementatious material is to be applied;

a handle coupled to said means for dynamically folding said blade whereby said tool may be manipulated and said blade dynamically folded by a person holding said handle;

wherein said blade has first and second sides and said means for dynamically folding said blade further comprises:

first and second folding plates coupled to said blade adjacent said first and said second sides respectively;

first and second pivot means pivotally coupling respectively said first and said second folding plates to said handle; and

first and second moment arms coupled respectively to said first and second folding plates for creating first and second oppositely directed moments of force to pivotally rotate said first and said second folding plates and fold said blade.

5,192,559

APPARATUS FOR BUILDING THREE-DIMENSIONAL OBJECTS WITH SHEETS

Charles W. Hull, Santa Clarita; Paul F. Jacobs, La Crescenta; Kris A. Schmidt, Granada Hills; Dennis R. Smalley, Baldwin Park, and Wayne A. Vinson, Valencia, all of Calif., assignors to 3D Systems, Inc., Santa Clarita, Calif.

Continuation of Ser. No. 589,060, Sep. 27, 1990. This application Dec. 3, 1991, Ser. No. 803,681
Int. Cl.[5] B29C 35/08, 41/02
U.S. Cl. 425—89 39 Claims

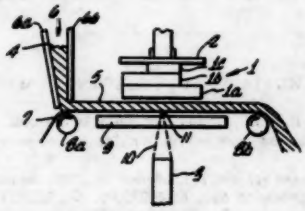
1. An apparatus for producing a three-dimensional object from sheets of material solidifiable upon exposure to synergistic stimulation, wherein portions of said sheets solidify to form cross-sections of said object, comprising:

a source of said sheets;

means for dispensing successive sheets from said source onto a working surface adjacent to previously formed cross-sections;

a source of said synergistic stimulation;

means for forming successive cross-sections of said object by selectively exposing first portions of said successive sheets to said synergistic stimulation according to corresponding



representations of said successive cross-sections, whereupon said first portions solidify, and unexposed regions comprise second portions of said sheets;

means for substantially removing at least some material from said second portions of said sheets; and

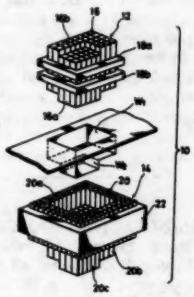
means for adhering said successive cross-sections to said previously formed cross-sections to form said three-dimensional object.

5,192,560

VARIABLE MOLD APPARATUS

Sachio Umetsu, and Toshihiko Miura, both of Kawasaki, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 489,357, Mar. 6, 1990, abandoned. This application Feb. 13, 1992, Ser. No. 834,978
Claims priority, application Japan, Mar. 7, 1989, 1-052906; Mar. 7, 1989, 1-052907; May 16, 1989, 1-120421
Int. Cl.[5] B28B 7/02
U.S. Cl. 425—175 9 Claims



1. A mold forming apparatus capable of varying a mold shape, comprising:

a first molding member having a plurality of bar-shaped die members arranged in a body and disposed in a matrix state in X and Y directions;

a second molding member having a plurality of bar-shaped die members arranged in a body and disposed in a matrix state in X and Y directions;

depressing means for vertically depressing, in accordance with a predetermined sequence, predetermined bar-shaped materials in said first molding member, wherein said first and second molding members are vertically aligned such that depressing said predetermined bar-shaped members in said first molding member also depresses a corresponding bar-shaped member in said sec-

ond molding member, and said first and second molding members are depressed based on their X and Y position in the matrix;

fixing means for fixing said bar-shaped members of said first and second molding members after said predetermined bar-shaped members of said first molding member are depressed;

shifting means for shifting said depressing means; and

control means for controlling said shifting means in the X and Y directions in accordance with the predetermined sequence.

5,192,561

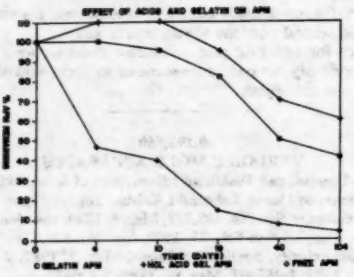
ASPARTAME STABILITY IN CHEWING GUM USING AN ACID GELATIN SYSTEM

Michael T. Bunczek, Dolton, and Philip W. Urnezis, Lombard, both of Ill., assignors to Wm. Wrigley Jr. Company, Chicago, Ill.

Continuation of Ser. No. 762,588, Sep. 19, 1991, abandoned. This application Aug. 20, 1992, Ser. No. 932,921

Int. Cl.[5] A23G *3/30*

U.S. Cl. 426—3 23 Claims



1. A method of preparing a sweetener ingredient for use in chewing gum, comprising in the following sequence the steps of:

mixing aspartame and an inorganic acid with water, to a concentration of about 40 to 400 grams of aspartame per liter of water, and about 0.125 to about 2.5 mols of acid per liter of water, to form an intimate blend;

mixing an encapsulating agent with the aspartame, acid and water, in an amount of about 1.4 to about 4.2 parts by weight of encapsulating agent per part by weight of aspartame; and

evaporating the water to form a sweetener ingredient.

5,192,562

METHOD OF MANUFACTURING A CHEWING GUM

Ronald T. Grey, Chicago; Mansukh M. Patel, Downers Grove, and Charles M. Copper, Willowbrook, all of Ill., assignors to Wm. Wrigley Jr. Company, Chicago, Ill.

Continuation of Ser. No. 800,560, Nov. 27, 1991, abandoned, which is a continuation-in-part of Ser. No. 568,462, Aug. 16, 1990, Pat. No. 5,085,872. This application Jul. 10, 1992, Ser. No. 912,225

Int. Cl.[5] A23G *3/30*

U.S. Cl. 426—4 19 Claims

1. A method of manufacturing a chewing gum comprising the following steps:

a) in a first mixing step mixing until homogenous an amount of a low fat gum base having a premix temperature of about 200–240° F., an amount of HFO gum base having a premix temperature of about 60–80° F. and an amount of a bulking agent to yield a gum base blend; and

b) in a final mixing step mixing with the gum base blend an amount of flavor and an amount of bulking agent.

5,192,563

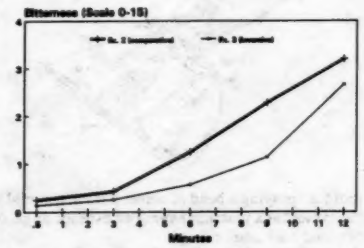
STRONGLY MINT-FLAVORED CHEWING GUMS WITH REDUCED BITTERNESS AND HARSHNESS

Mansukh M. Patel, Downers Grove; Kevin B. Broderick, Berwyn; Marc A. Meyers, Naperville; Philip G. Schnell, Downers Grove; Joo H. Song, Northbrook; Robert J. Yatka, Orland Park, and Steven E. Zibell, Tinley Park, all of Ill., assignors to Wm. Wrigley, Jr. Company, Chicago, Ill.

Continuation-in-part of Ser. No. 358,692, May 26, 1989, and a continuation-in-part of Ser. No. 134,948, Dec. 18, 1987, Pat. No. 4,863,745, and a continuation-in-part of Ser. No. 565,605, Aug. 9, 1990, which is a continuation-in-part of Ser. No. 383,291, Jul. 17, 1989, which is a continuation of Ser. No. 205,495, Jun. 6, 1988, abandoned, which is a continuation of Ser. No. 921,753, Oct. 22, 1986, abandoned, said Ser. No. 565,605, is a continuation-in-part of Ser. No. 311,125, Feb. 15, 1989, said Ser. No. 358,692, is a continuation-in-part of Ser. No. 205,495, Jun. 6, 1988, abandoned, which is a continuation of Ser. No. 921,753, Oct. 22, 1986, abandoned, said Ser. No. 134,948, is a continuation-in-part of Ser. No. 921,754, Oct. 22, 1986, abandoned. This application Dec. 17, 1991, Ser. No. 810,669

Int. Cl.[5] A23G *3/30*

U.S. Cl. 426—5 20 Claims



1. A method of producing high-impact mint-flavor chewing gum comprising the steps of:

a) preparing an ingredient comprising zein and a cellulose derivative and

b) mixing the zein-cellulose derivative ingredient in a chewing gum formulation comprising about 5% to about 95% gum base, about 5% to about 95% bulking agent and about 0.1% to about 10% of a mint-flavoring agent.

5,192,564

COMPOSITE DOUGH PRODUCT AND A PROCESS FOR PRODUCING SAME

Abdel Abdelrahman, St. Louis, Mo., assignor to Continental Baking Company, St. Louis, Mo.

Filed Jul. 5, 1991, Ser. No. 726,427

Int. Cl.[5] A21D *10/00*

U.S. Cl. 426—19 2 Claims

1. A composite yeast leavened dough mass for the formation of bread having an effective oven spring comprising an inner dough portion and outer dough portion which enrobes said inner portion, said inner and outer dough portions comprising a weight ratio of about 4:1 to about 3:2, said outer dough comprising a yeast leavened bread dough with an effective oven spring; said inner dough comprising a yeast leavened bread dough which contains a fibrous source in an amount of 5 to 25% by weight of the inner dough thereby providing a dough with less oven spring than the outer dough portion.

5,192,565

PRESERVATION OF VEGETABLES AND FRUITS

Marcel Buhler, Tolochenaz; Thang Ho Dac, Le Mont-s/Lausanne; Hugh Hose, Yverdon, and Robert D. Wood, Lausanne, all of Switzerland, assignors to Nestec S.A., Vevey, Switzerland

Filed Sep. 9, 1991, Ser. No. 756,816

Claims priority, application Switzerland, Sep. 28, 1990, 3130/90-2

Int. Cl.[5] A23B *7/10*

U.S. Cl. 426—49 12 Claims

1. A process for preserving foods comprising:

heat-treating at least one food selected from the group of foods consisting of vegetables and fruits for from 1 minute to 15 minutes at a temperature of from 80° to 95° C. and then cooling the heat-treated food;

fermenting the cooled heat-treated food with a lactic bacterium in the presence of water for from 10 hours to 3 days at a temperature of from 15° C. to 45° C. to obtain a fermented food and a water of fermentation having a pH of from 3.1 to 4.4;

draining the water of fermentation from fermented food;

washing the fermented food with water to remove water of fermentation from the food, and if the pH of the washed food is not at a pH of from 3.8 to 4.4, adjusting the pH of the washed food to a pH of from 3.8 to 4.4; and

pasteurizing the washed food having a pH of from 3.8 to 4.4 for from 2 minutes to 30 minutes at a temperature of from 80° C. to 110° C. to obtain a pasteurized food.

5,192,566

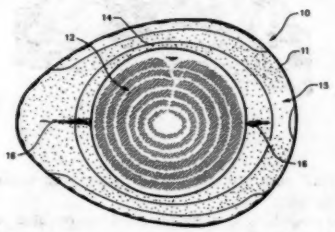
WHOLE POULTRY EGG ANALOGUE COMPOSITION AND METHOD

James P. Cox, and Jeanne M. Cox, both of 246 E. Bartlett Rd., Lynden, Wash. 98264

Continuation of Ser. No. 348,310, May 5, 1989, abandoned, which is a continuation-in-part of Ser. No. 190,885, May 6, 1988, abandoned. This application Sep. 21, 1990, Ser. No. 588,517

Int. Cl.[5] A23L *1/32;* A23P *1/12*

U.S. Cl. 428—89 54 Claims



27. A whole poultry egg analogue which comprises:

an egg yolk material with characteristics which emulate the characteristics of a natural egg yolk;

an at least semitransparent egg white which can be set and made opaque by the application of heat; and

a rupture resistant membrane surrounding and encapsulating the yolk, said membrane simulating the vitelline membrane of a naturally occurring egg and having means for forming the yoke into a shape resembling that of a natural egg yolk and for attaching said egg white to said yolk;

said egg yolk material being so formulated that, when the egg analogue is cooked, said yolk material assumes a consistency similar to that of a cooked natural egg yolk.

5,192,567

GLOSSY COATED FRIED AND BAKED FOODS AND METHOD FOR MAKING

Lisa A. Vickers, Aurora; Annette P. Zyck, North Riverside; Donald T. Komora, Palatine; Mary P. Kirby, Palos Heights, and Donald B. Bernacchi, Chicago, all of Ill., assignors to Griffith Laboratories Worldwide, Inc., Alsip, Ill.

Filed Jan. 21, 1992, Ser. No. 823,198

Int. Cl.[5] A23L *1/31, 1/315*

U.S. Cl. 426—92 4 Claims

1. A method for obtaining a glossy coating on fried and baked foods comprising applying to a heated fried or baked food substrate a blend of about 20 to 49.9 percent by weight gum arabic, about 50 to 75 percent by weight tapioca dextrin and about 0.1 to 5.0 percent by weight xanthan gum.

5,192,568

CAVITY FORMING AGENT FOR EDIBLE FOODS

Kazuaki Yokoyama, Chiba; Kiyomi Taniguchi, Koshigaya; Hisao Sekiguchi, Tokyo, and Tomiatsu Kaneko, Ichikawa, all of Japan, assignors to Myoshi Oil & Fat Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 585,775, Sep. 20, 1990, abandoned. This application Dec. 20, 1991, Ser. No. 811,717

Claims priority, application Japan, Sep. 22, 1989, 1-247429

Int. Cl.[5] A21D *13/00*

U.S. Cl. 426—94 6 Claims

1. A cavity forming agent for edible foods wherein the food is selected from the group consisting of cakes and breads comprising by weight 10% to 30% edible oils and fats, 1% to 10% proteins, 1% to 10% polysaccharides, 0.1% to 5% phosphates, citrates or mixtures thereof, and 40% to 88% water, with the proteins selected from the group consisting of rennet casein, sodium caseinate, acid casein, soybean protein, wheat protein and skim milk powder.

5,192,569

FAT-LIKE BULKING AGENT FOR AQUEOUS FOODS COMPRISING MICROCRYSTALLINE CELLULOSE AND A GALACTOMANNAN GUM

Emanuel J. McGinley, Morrisville, and Domingo C. Tuason, Jr., Bensalem, both of Pa., assignors to FMC Corporation, Philadephia, Pa.

Continuation of Ser. No. 519,693, May 7, 1990, abandoned, which is a continuation-in-part of Ser. No. 359,065, May 26, 1989, abandoned. This application Dec. 18, 1991, Ser. No. 809,857

Int. Cl.[5] A23L *1/0526, 1/0534*

U.S. Cl. 426—96 37 Claims

1. A composition comprising dry, water-dispersible, water-stable, substantially spheroidal-shaped particles having an average particle size in the range of about 0.1–100 microns, each particle consisting essentially of an aggregate of about 60–99% by weight of microcrystalline cellulose and about 40–1% by weight of a galactomannan gum, which aggregate remains impact if dispersed in an aqueous medium.

5,192,570

PROCESS FOR TREATING RED MEAT TO CONTROL BACTERIAL CONTAMINATION AND/OR GROWTH

Fredric G. Bender, 142 Irwin Ave., Houston, Pa. 15342, and Eugene Brotsky, 5453 Covode St., Pittsburgh, Pa. 15217

Filed Jun. 7, 1991, Ser. No. 712,245

The portion of the term of this patent subsequent to Dec. 3, 2008, has been disclaimed.

Int. Cl.[5] A23L *3/34, 1/317*

U.S. Cl. 426—332 10 Claims

1. A process for treating red meat comprising treating the surface of eviscerated red meat, with a treatment solution comprising trialkali metal orthophosphate at a pH exceeding 11.5 in an amount and for a period of time effective to retard, reduce or remove bacterial contamination and/or growth

without substantial color change caused by the treatment solution pH and with the proviso that the solution does not contain alcohol, nitrate or nitrite, or ascorbic acid.

5,192,571

PROCESSES FOR EFFECTING THE DECHLORINATION OF TAP WATER ADDED TO BEVERAGES

Ehud Levy, 1033 Chestnut Hill Cir., Marietta, Ga. 30064

Continuation-in-part of Ser. No. 606,307, Oct. 31, 1990, Pat. No. 5,096,721. This application Feb. 6, 1992, Ser. No. 832,031

The portion of the term of this patent subsequent to Mar. 17, 2009, has been disclaimed.

Int. Cl.[5] A23F *3/18, 5/26*

U.S. Cl. 426—433 **13 Claims**

1. A process for removing chlorines from a coffee beverage in a coffee making process comprising the step of introducing water which is used for making said beverage at a temperature and in an amount sufficient to brew the coffee beverage, said water having a chlorine content of 1–3 ppm and a pH of 6 to 9, into a basket of a coffee maker that holds a filter and coffee grounds in said filter, said filter having added to it a material consisting of an alkali metal or alkaline earth metal thiosulfate selected from the group consisting of sodium thiosulfate, magnesium thiosulfate and calcium thiosulfate, in a quantity that reacts with 60% to 100% the chlorines in said water on a 0.25–1.00 to one molecular basis with the stoichiometric amount of chlorine present in said water that is so reacted with, said reaction being substantially complete in less than about twenty seconds from when said alkali metal or said alkaline earth metal thiosulfate in said filter was exposed to and dissolved by said water, said water contacting said coffee grounds in said filter for a sufficient time and at a sufficient temperature to make said coffee beverage.

10. A process for removing chlorines from a tea beverage in the tea making process comprising introducing a tea beverage making substance into water which is used for making said tea beverage at a temperature and in an amount sufficient to make said tea beverage by the dissolution of said substance, said water having a chlorine content of about one to three parts per million and a pH of about 6 to 9 wherein the tea beverage substance is selected from a group consisting of instant tea and tea leaves, said tea beverage substance having added to it a material consisting of an alkali metal or an alkaline earth metal thiosulfate selected from the group consisting of sodium thiosulfate, magnesium thiosulfate and calcium thiosulfate, in a quantity of 0.2 to 0.6 milligrams per liter of that amount of said water which is sued in the process, said thiosulfate's reaction with said chlorines in said water being substantially complete in less than about three seconds from when said thiosulfate was exposed to and dissolved by said water, said water contacting said substance at a sufficient temperature and within a sufficient period of time to make said tea beverage.

5,192,572

METHOD OF USING SILICA TO DECREASE FAT ABSORPTION

Magda El-Nokaly, Hamilton, and George D. Hiler, Harrison, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 674,500, Mar. 25, 1991, Pat. No. 5,100,684. This application Dec. 16, 1991, Ser. No. 808,115

The portion of the term of this patent subsequent to Mar. 31, 2009, has been disclaimed.

Int. Cl.[5] A23L *1/217*

U.S. Cl. 426—438 **22 Claims**

1. A process for lowering the fat absorption of fried potato pieces comprising frying potato pieces in an oil comprising from about 0.1% to about 2% silica and about 98% to about 99.9% oil wherein said silica is a hydrophilic silica with a particle size of between about 7 and 100,000 nm.

5,192,573

METHOD FOR MAKING A FLAVORING COMPOSITION

Cirello Alfredo, Via Arona, 16, 20145 Milano, Italy

Filed Sep. 20, 1991, Ser. No. 764,138

Claims priority, application Italy, Sep. 21, 1990, 21537 A/90

Int. Cl.[5] A23L *1/226*

U.S. Cl. 426—533 **3 Claims**

1. A method for making a truffle flavour composition comprising the steps of providing natural casein as a precursor material of said composition, adding to said casein 37% hydrochloric acid and 95% by volume ethyl alcohol to provide a reaction mixture, heating said reaction mixture to cause said reaction mixture to provide reaction vapors, refluxing said reaction vapors for a time sufficient to bring said reaction mixture to a stable temperature of 102.5° C., neutralizing said reaction mixture with sodium carbonate to a pH value of 6.2, filtering said reaction mixture to provide a concentrated mixture and a first clear liquid, concentrating said first clear liquid to about 20 Bé, further filtering said concentrated mixture to provide a second clear liquid and concentrating said second clear liquid to provide an end truffle flavouring product.

5,192,574

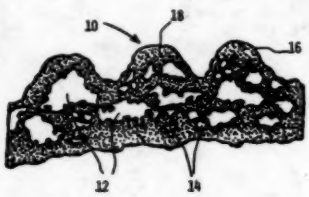
CORN RINGS AND METHOD OF MANUFACTURE

Dewey R. Hunt; Veldon M. Hix, both of Idaho Falls, Id.; Miles J. Willard, 229 N. Lloyd Cir., Idaho Falls, Id. 83402, and Kyle E. Dayley, Rigby, Id., assignors to Miles J. Willard, Idaho Falls, Id.

Division of Ser. No. 743,078, Aug. 9, 1991, Pat. No. 5,100,686, which is a continuation of Ser. No. 424,061, Oct. 19, 1989, abandoned. This application Dec. 13, 1991, Ser. No. 806,627

Int. Cl.[5] A23L *1/10*

U.S. Cl. 426—549 **17 Claims**



1. A fried corn product having a controlled expanded texture comprising:

a food piece having uniformly sized comminuted corn particles which uniformly sized comminuted corn particles are made from cooked and washed whole corn kernels that are comminuted to a preferred particle size distribution by successively impelling the corn against a blade and through a first screen sized to produce a first particle size distribution and then through a second screen sized to produce a second particle size distribution.

5,192,575

Patent Not Issued For This Number

5,192,576

THICK-THIN RETORT STARCH

Shau-Gan Chang, Chicago, Ill.; Linda L. Charlton, Wheatfield, Ind.; Jane D. Gottneid, Griffith, Ind., and Ibrahim R. Abbas, Munster, Ind., assignors to American Maize-Products Company, Stamford, Conn.

Filed Oct. 11, 1991, Ser. No. 775,219

Int. Cl.[5] A23L *1/0522*

U.S. Cl. 426—578 20 Claims

1. A thick-thin retort starch comprising an oxidized, non-crosslinked, substituted hydroxy alkylated starch ether wherein the starch ether is made from a base starch selected from the group consisting of waxy starches and root starches; the starch ether has a degree of substitution of up to about 0.93; and the starch ether is oxidized with a hypochlorite solution with about 0.08% to about 3.5% available chlorine by weight starch, at a pH of about 3.5 to about 5.0, to obtain a retort starch having a hot paste viscosity of about 4000 cps to about 6000 cps when measured with a Brookfield viscometer at 20 rpm.

5,192,577

NUTRITIONAL COMPOSITION AND A PROCESS FOR ITS PRODUCTION

Gérard Masson, Cully, Switzerland, assignor to Nestec S.A., Vevey, Switzerland

Filed Sep. 20, 1991, Ser. No. 763,411

Claims priority, application Switzerland, Oct. 26, 1990, 3430/90

Int. Cl.[5] A23D *7/00*

U.S. Cl. 426—602 22 Claims

1. A process for preparation of a nutritional composition comprising preparing an oil-in-water emulsion, preparing a colloidal solution containing an amino acid source and a glucide, adding kappa-carrageenan and a xanthan gum to the colloidal solution and then mixing the emulsion and colloidal solution to obtain the nutritional composition, wherein the kappa-carrageenan and xanthan gum are added to the colloidal solution in amount so that the composition contains per part at least $0.6 \cdot 10^{-3}$ part kappa-carrageenan and at least $0.1 \cdot 10^{-3}$ part xanthan gum by weight.

5,192,578

METHOD OF PRODUCING COATING USING NEGATIVE DC PULSES WITH SPECIFIED DUTY FACTOR

Jürgen Ramm, Flaesch; Helmut Daxinger, Wangs; Rainer Buhl, Sargans, and Erich Bergmann, Mels, all of Switzerland, assignors to Balzers AG, Furstentum, Liechtenstein

Filed Nov. 14, 1990, Ser. No. 613,390

Claims priority, application Switzerland, Nov. 22, 1989, 4192/89

Int. Cl.[5] B05D *3/06*

U.S. Cl. 427—576 10 Claims

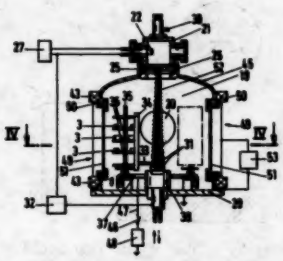
1. A method for the production of a coating made of a ceramic, electrically non-conducting material, on a surface of a workpiece, comprising:

placing the workpiece in, and insulating the workpiece from a vacuum chamber;

a first process step wherein at least one of an oxide and nitride former, acting as at least one first material, is converted into a gaseous state and is at least partially ionized in the vacuum chamber using a first electrical voltage;

a second process step wherein at least one of nitrogen and oxygen, acting as at least one second material, is introduced into and at least partially ionized in the vacuum chamber using the first electrical voltage; and

at least during the second process step, applying a second voltage to the workpiece for depositing at least one of an electrically non-conducting oxide, nitride, and oxinitride layer on the surface of the workpiece, the second voltage being a negative pulsating dc voltage having a period and



a pulse duty factor, the period being a few microseconds and the pulse duty factor being between 60 and 90% of the period.

5,192,579

METHOD OF FORMING THIN FILM ON FIBER END SURFACE BY BREAKING IT IN A VACUUM

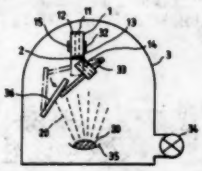
Takafumi Uemiya; Naota Uenishi; Akira Mizoguchi, and Yasuhiro Hattori, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Aug. 28, 1991, Ser. No. 751,091

Claims priority, application Japan, Aug. 29, 1990, 2-228630; Dec. 19, 1990, 2-403916

Int. Cl.[5] B05D *3/06*

U.S. Cl. 427—571 12 Claims



1. A method of forming a thin film on an end surface of a fiber comprising an organic core formed from a material selected from organic crystals and high molecular weight organic material, and a clad made of glass, said method comprising:

(a) placing the fiber in a vacuum chamber;

(b) reducing the pressure in the chamber;

(c) cutting the fiber under reduced pressure; and

(d) forming a thin film on the cut surface of said fiber, using a vapor phase film forming process, simultaneously with or immediately after the cutting.

5,192,580

PROCESS FOR MAKING THIN POLYMER FILM BY PULSED LASER EVAPORATION

Graciela B. Blanchet-Fincher, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

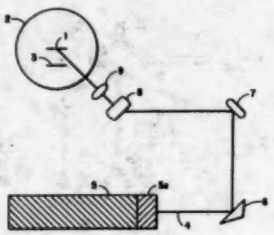
Continuation-in-part of Ser. No. 869,651, Apr. 16, 1992. This application Jul. 22, 1992, Ser. No. 916,663

Int. Cl.[5] B05D *3/06*

U.S. Cl. 427—596 23 Claims

1. A process for producing thin film of a first addition polymer on a substrate comprising: bombarding a target, consisting essentially of a second addition polymer, with radiation from a pulsed laser in a vacuum or gas atmosphere of gaseous fluoro-

carbon or inert gas to form a plume of components of said second addition polymer; and depositing said plume on the



substrate, whereby a film of said first addition polymer is formed.

5,192,581

PROTECTIVE LAYER FOR PREVENTING ELECTROLESS DEPOSITION ON A DIELECTRIC

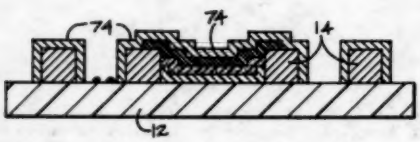
Tom J. Hirsch, Austin; Charles W. C. Lin, San Antonio; Chung J. Lee, and Heinrich G. O. Muller, both of Austin, all of Tex., assignors to Microelectronics and Computer Technology Corporation, Austin, Tex.

Continuation-in-part of Ser. No. 600,361, Oct. 19, 1990, Pat. No. 5,084,299, which is a continuation-in-part of Ser. No. 494,897, Mar. 3, 1990, Pat. No. 4,981,715, which is a continuation-in-part of Ser. No. 393,170, Aug. 10, 1989, abandoned. This application Jan. 14, 1992, Ser. No. 822,383

The portion of the term of this patent subsequent to Jan. 1, 2008, has been disclaimed.

Int. Cl.[5] B05D *3/06, 5/12;* **H01L** *21/306*

U.S. Cl. 427—556 **48 Claims**



1. A process for the selective deposition of a metal on a substrate comprising the following steps in the sequence set forth:

(a) providing a substrate with a top dielectric surface;

(b) coating the substrate with a protective layer;

(c) coating the protective layer with a catalyst film which can initiate electroless deposition;

(d) directing a laser beam at the substrate to irradiate the catalyst film in a pattern;

(e) placing the substrate in a wet chemical etch that etches the non-irradiated catalyst film without etching the irradiated catalyst film or the protective layer;

(f) removing the substrate from the wet chemical etch after all the non-irradiated catalyst film is removed from the substrate;

(g) placing the substrate in an electroless plating bath so that an electrically conductive metal is deposited on the irradiated catalyst film without depositing the metal on the protective layer or the dielectric and without removing the protective layer from the dielectric; and

(h) removing the substrate from the electroless plating bath wherein the only metal which adheres to the protective layer is formed in the pattern on the irradiated catalyst film.

5,192,582

PROCEDURE FOR PROCESSING JOINTS TO BE SOLDERED

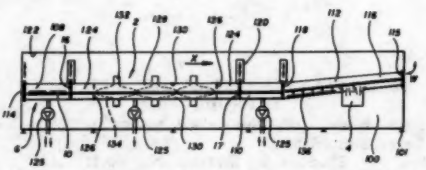
Volker Liedke, Elsenfeld/Eichelsbach; Karl H. Grasmann, Stadprozelten; Hans-Jurgen Albrecht, Berlin; Harald Wittrich, Berlin; Wilfred John, Berlin, and Wolfgang Scheel, Berlin, all of Fed. Rep. of Germany, assignors to WLS Karl-Heinz Grasmann Weichlötanlagen-und Service, Faulbach/Main, Fed. Rep. of Germany

Filed Nov. 5, 1990, Ser. No. 609,400

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1989, 3936955; Oct. 11, 1990, 4032328

Int. Cl.[5] C23C *26/00*

U.S. Cl. 228—206 **41 Claims**



41. An arrangement for processing joints, printed board assemblies, to be soldered comprising a soldering arrangement (4) and a low pressure process chamber (2) allocated to this soldering arrangement for subjecting the joints to plasma pretreatment, whereby

said process chamber (2) having a first temporary storage tank (110) for holding the plasma-treated joints (10), from which the joints are fed to said soldering arrangement (4),

said process chamber (2) having a second temporary storage tank

the joints (10) are brought into a predetermined (108) for holding the joints (10) to be treated in said process chamber (2),

said first and second temporary storage tanks (110, 108) are each separated from each process chamber (2) by first (16, 17) and (114, 118) locks, a plurality of high-frequency generators (132) for generating the gas plasma are arranged on covering surfaces (130) of process chamber (2) so that the joints are treated in essentially a uniform manner with the gas plasma,

the first and/or second temporary storage tanks (110,108) are evacuated and ventilated by means of a vacuum pump (125),

a protective gas tunnel (112) through the joints are supplied to soldering arrangement (4) follows the first temporary storage tank (110),

the process chamber (2), the soldering arrangement (4), the first temporary storage tank (110), the second temporary storage tank (108) and the protective gas tunnel (112) are arranged in a shared through tunnel (100), through which printed board assemblies (10) are conveyed by means of a shared conveying system (106), and whose inlet and outlet openings are sealed by means of an inlet or outlet gate (114,115),

the section on the inlet and outlet side of process chamber (2) viewed in transport direction (X) is designed as a relaxation zone (124), in which no energy input takes place, each printed circuit board (20) being positioned on an auxiliary frame of conveying system (106) during transport,

and the soldering arrangement (4) is a double-wave soldering arrangement.

5,192,583

PRODUCTION OF A MAGNETIC RECORDING MEDIUM

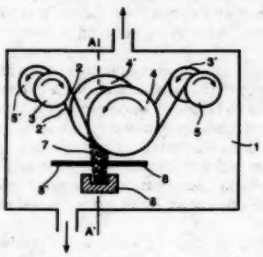
Hans J. Richter, St. Martin; Hartmut Hibst, Schriesheim, and Gerd Fischer, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Magnetics GmbH, Mannheim, Fed. Rep. of Germany

Filed Apr. 10, 1992, Ser. No. 866,739

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1991, 4112095

Int. Cl.[5] H01F *10/02*

U.S. Cl. 427—128 1 Claim



1. A process for the production of a magnetic recording medium, consisting essentially of a polymeric substrate and a coherent thin layer of a ferromagnetic material, in a chamber under reduced pressure by producing a vapor jet of the ferromagnetic material from an evaporator unit provided with said material and depositing the vapor jet on the substrate guided over a cylindrical drum, the vapor jet striking the substrate at angles differing from 90°, wherein, in the chamber under reduced pressure, a vapor jet of ferromagnetic material, emerging from an evaporator unit in the direction of the cylindrical drum, comes into contact at angles of incidence of not less than 30° and not more than 90° with the surfaces of two web-like substrates guided in opposite directions over two separate, cylindrical drums, with the proviso that the evaporator unit is shifted in the axial direction of the drums so that it is located essentially between the two cylindrical drums.

5,192,584

METHOD FOR MANUFACTURING MAGNETIC RECORDING MEDIUM

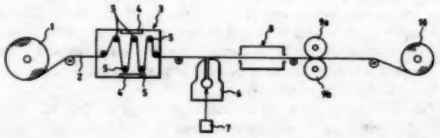
Toshio Miyashiro, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 8, 1992, Ser. No. 818,093

Claims priority, application Japan, Jan. 9, 1991, 3-044514

Int. Cl.[5] B05D *5/12*

U.S. Cl. 427—129 4 Claims



1. In a method for manufacturing a magnetic recording medium, the improvement wherein immediately before the surface of a flexible strip-like support is coated with a magnetic coating liquid, the flexible strip-like support is heated at a temperature of 90° to 120° C. while running while being subjected to a tension of 5 to 12 kg/m.

5,192,585

DIFFERENTIAL PRESSURE SEALING APPARATUS AND METHOD

Yukio Inokuti, and Yo Ito, both of Chiba, Japan, assignors to Kawasaki Steel Corp. and Nihon Shinku Gijutsu Kabushiki Kaisha, Japan

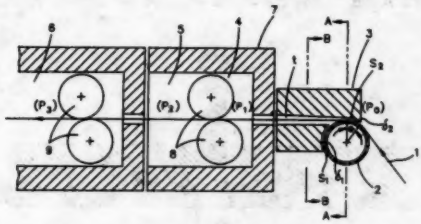
Continuation of Ser. No. 192,535, May 11, 1988, abandoned.

This application Sep. 26, 1990, Ser. No. 590,503

Claims priority, application Japan, May 20, 1987, 62-121016; Jun. 25, 1987, 62-156457; Aug. 5, 1987, 62-194499; Mar. 18, 1988, 63-63704

Int. Cl.[5] B05D *3/12, 3/00;* C23C *14/56*

U.S. Cl. 427—172 17 Claims



1. An apparatus for continuously processing an elongated sheet through successive zones of reduced pressure, comprising:

(a) means forming at least one chamber containing at least one of said zones of reduced pressure, said chamber having an entrance through which said elongated sheet may be introduced,

(b) vacuum means connected to maintain reduced pressure in said chamber,

(c) a guide roller arranged adjacent to said chamber and around which said elongated sheet may be wrapped prior to entering said chamber, said guide roller including a plurality of pores and a vacuum means communicating with the interior of said guide roller and acts through said pores to suck said elongated sheet against the wrapped surface of said guide roller,

(d) means forming a sealing structure encompassing at least a portion of said chamber entrance and a portion of said elongated sheet to restrict the passage of atmospheric air past said guide roller into said chamber,

(e) means for wrapping said elongated sheet upon said guide roller, and

(f) means for urging the wrapped portion of said elongated sheet tightly against the wrapped surface of said guide roller.

5,192,586

METHOD AND APPARATUS FOR COATING A SUBSTRATE WITH A LIQUID RESIN

Peter E. Mertinooke, Amesbury; Louis Halberstadt, Andover; Dan C. Muessel, Danvers, all of Mass., and Joseph V. Perry, Chester, N.H., assignors to Amesbury Industries, Inc., Amesbury, Mass.

Continuation of Ser. No. 270,778, Nov. 14, 1988, abandoned.

This application Feb. 1, 1991, Ser. No. 650,974

Int. Cl.[5] B05D *5/08, 1/26, 3/12;* B05C *3/15*

U.S. Cl. 427—210 40 Claims

1. A method of applying a coating to a substrate utilizing a die including a die plate, a face plate coupled to said die plate so as to define a resin channel therein, a die opening formed in said die plate and said face plate for passing said substrate therethrough, and a wall disposed between said resin channel and said die opening so as to form a metering gap between a top of said wall and said face plate, said method comprising the steps of:

introducing a resin in a liquid state into said resin channel at a predetermined pressure;

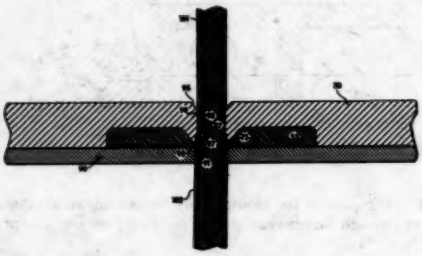
maintaining the liquid resin within a first pressure range in said resin channel;

metering the liquid resin from said resin channel to said die opening through said metering gap so as to bring the liquid resin from the first pressure range to a second pressure range, the pressures in the second pressure range being generally lower than the pressures in the first pressure range;

passing said substrate through said die opening; and

applying the liquid resin at a pressure within the second pressure range to said substrate as said substrate passes through said die opening.

32. A die for coating a substrate, said die comprising:



a die plate;

a face plate coupled to said die plate so as to define a resin channel therein for maintaining a resin in a liquid state within a first pressure range;

a die opening in said die plate and said face plate for passing said substrate therethrough; and

a wall disposed between said resin channel and said die opening so as to form a metering gap between a top of said wall and said face plate for metering the liquid resin from said resin channel to said die opening so as to bring the liquid resin from the first pressure range to a second pressure range in order to coat said substrate with the liquid resin, the pressures in the second pressure range generally being lower than the pressures in the first pressure range.

5,192,587

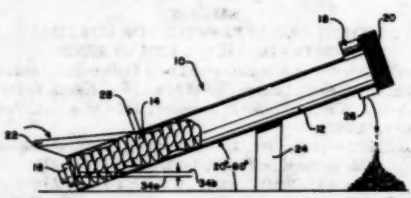
METHOD FOR COLORING WOOD CHIPS

Gregory J. Rondy, Barberton, Ohio, assignor to Kurtz Bros., Inc., Cuyahoga Heights, Ohio

Filed Aug. 23, 1991, Ser. No. 749,141

Int. Cl.[5] B05D *7/06*

U.S. Cl. 427—212 **7 Claims**



1. A method of preparing a colored wood product, useful as mulch, comprising:

a) feeding comminuted wood into an angularly upward positioned screw conveyor having a first end situated lower than a second end thereof, said screw conveyor further having a solid helical auger disposed axially within and in a close fitting relation to the internal surface of a generally closed cylindrical channel with a feed port near said first end on the top side of the conveyor and a discharge port near said second ed on the bottom side of the conveyor, said helical auger capable of being rotated by a drive means, and the angularly positioned first end of said cylindrical channel effectively forming a basin portion for the retention of liquid, wherein the comminuted wood is fed in a continuous manner by a gravity feed on top of the auger through the feed port into said first end of said angularly upwardly positioned screw conveyor,

b) contacting said comminuted wood with an aqueous color-imparting solution containing at least one color-imparting agent therein, said contact occurring in the basin portion of said screw conveyor for sufficient time to disperse said color-imparting solution upon the surfaces of said comminuted wood, effectively forming a wet colored wood product;

c) rotating the auger whereby the auger sides remain in close proximity to the internal surface of the cylindrical channel so that said wet colored wood product is drawn upwardly out of said basin and toward said second end, during whicih process excess said color-imparting solution drains away from said wet colored wood product and returns by gravity to said basin portion, effectively drying said wet colored wood product into a moist colored wood product; and

d) discharging said moist colored wood product by gravity from said screw conveyor via said discharge port and, if necessary further drying said moist colored wood product.

5,192,588

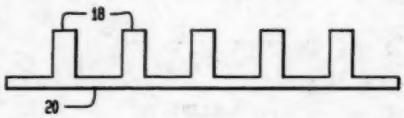
ELECTROFORMED METHOD FOR FABRICATING ROUND MESA MILLIMETER WAVE WAFFLELINE STRUCTURE

Ralph D. DiStefano, Palm Bay, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Mar. 5, 1991, Ser. No. 665,263

Int. Cl.[5] H01L *21/00*

U.S. Cl. 427—247 **24 Claims**



22. A method of manufacturing a waffleline-configured structure comprised of an array of conductive mesas that extend from a support base, said mesas being of predetermined dimensions and disposed in a predetermined array pattern, comprising the steps of:

(a) drilling an array of holes of predetermined dimensions through a conductive substrate, so as to intersect first and second surfaces thereof, said array of holes defining a predetermined hole pattern in said conductive substrate;

(b) electrolessly depositing and building up multiple layers of conductive material on sidewalls of the holes of said array and on said first and second surfaces of said conductive substrate, so as to completely fill said holes and build up conductive material on said first and second surfaces of said conductive substrate;

(c) machining built up conductive material that has been deposited upon said first surface of said conductive substrate, thereby exposing conductive material within the holes of said array; and

(d) etching away said conductive substrate, thereby leaving an array of conductive mesas corresponding to the conductive material that has been deposited in and fills the holes of said array, said array of conductive mesas extending from conductive material that has built up on said

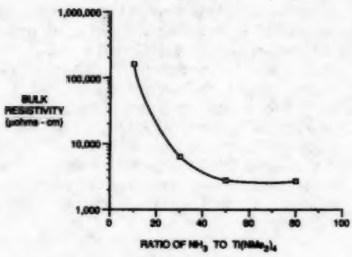
second surface of said conductive substrate which forms a support base for said array of conductive mesas.

5,192,589

LOW-PRESSURE CHEMICAL VAPOR DEPOSITION PROCESS FOR DEPOSITING THIN TITANIUM NITRIDE FILMS HAVING LOW AND STABLE RESISTIVITY

Gurtej S. Sandhu, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Sep. 5, 1991, Ser. No. 755,202
Int. Cl.[5] C23C *16/18, 16/34*
U.S. Cl. 427—255.1 **15 Claims**



1. An improved process for creating a titanium nitride film having stable bulk resistivity on a substrate via chemical vapor deposition, said process comprising the following sequence of steps:

a) introducing the substrate in a chemical vapor deposition chamber;

b) purging the chamber of oxygen;

c) establishing a flow of gaseous ammonia and gaseous titanium metal organic compound into the chamber such that the flow rate of the former is more than approximately thirty times the flow rate of the latter: and

d) heating the substrate to at least 200° C.

5,192,590

COATING METAL ON POLY(ARYL ETHER KETONE) SURFACES

Edward S. Sherman, Sunnyvale, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 431,515, Nov. 3, 1989, abandoned. This application Dec. 18, 1989, Ser. No. 452,170
Int. Cl.[5] B05D *3/10*
U.S. Cl. 427—304 **19 Claims**

1. A method of coating a surface comprising a poly(aryl ether ketone) composition with metal which comprises:

a) treating the surface with a swelling agent for a period of time sufficient to swell the surface, said swelling agent being selected from the group consisting of (i) sulfuric acid and mixtures of sulfuric acid and phosphoric acid in which the phosphoric acid is less than 50% by weight based on the weight of the mixture , (ii) hydrofluoric acid, (iii) chlorosulfonic acid, (iv) fluorosulfuric acid, (v) trifluoroalkane sulfonic acids and mixtures thereof with antimony pentafluoride, tantalum pentafluoride, or niobium pentafluoride, (vi) mixtures of hydrogen fluoride with at least one of antimony pentafluoride, arsenic pentafluoride, tantalum pentafluoride, niobium pentafluoride, and boron pentafluoride, (vii) a Lewis acid-Lewis base complex in a diluent, (viii) diphenyl sulfone, and (ix) N-methyl caprolactam;

b) removing the swelling agent;

c) etching the treated surface; and

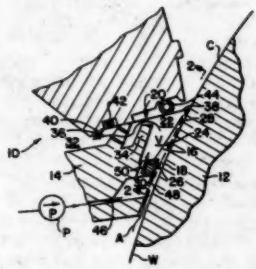
d) depositing metal on the etched surface to provide a first metal layer.

5,192,591

SHORT DWELL COATER APPARATUS

James L. Chance, Rockton, Ill., assignor to Beloit Technologies, Inc., Wilmington, Del.

Filed Nov. 14, 1991, Ser. No. 791,722
Int. Cl.[5] B05C *3/18, 11/04;* B05D *3/12*
U.S. Cl. 427—356 **13 Claims**



1. A short dwell coater apparatus for the application of coating material to a web which is supported by a backing member, said apparatus comprising:

a housing disposed closely adjacent to the backing member such that the web moves between said housing and the backing member, said housing defining an application zone which is connected to a pressurized source of the coating material, said application zone having an open face directed towards the web;

blade means adjustably secured to said housing and extending from said housing towards the web, said blade means defining a downstream extremity of said application zone;

movable flow divider means supported by said housing and extending into said application zone, said divider means having an upstream and a downstream end, said downstream end being movably disposed in the vicinity of said blade means for reducing the size of a flow vortex generated within said application zone due to movement of the web past said open face, said upstream end being stationary relative to the web; and

said divider means is a flexible sheet which is unsupported at said downstream end thereof such that said sheet oscillates within said application zone for dampening and reducing the size of said vortex.

13. A method for the application of coating material to a web which is supported by a backing roll, said method comprising the steps of:

moving the web between a housing and the backing roll, the housing defining an application zone which is connected to a pressurized source of the coating material, the application zone having an open face directed towards the web;

adjustably securing a blade to the housing such that the blade extends from the housing towards the web, the blade defining a downstream extremity of the application zone for metering excess coating material from the web; and

dividing a flow of coating material entering the application zone into a first and a second flow path by the provision of a flow divider which is supported by the housing and which extends into the application zone, the divider having an upstream and a downstream end with the downstream end being movably disposed in the vicinity of the blade such that the divider oscillates within the application zone for reducing the size of a flow vortex generated within the application zone due to movement of the web past the open face, thereby reducing streaking of the coated web at high coating velocities.

5,192,592

METHOD OF COATING SUBSTRATES UTILIZING AN ALKALI-FUNCTIONAL ASSOCIATIVE THICKNER CONTAINING COATING COMPOSITION

Gregory D. Shay, Oak Forest, Ill., assignor to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Continuation of Ser. No. 559,164, Jul. 30, 1990, abandoned. This application Mar. 5, 1992, Ser. No. 845,367
Int. Cl.[5] B05D 3/12
U.S. Cl. 427—358 15 Claims

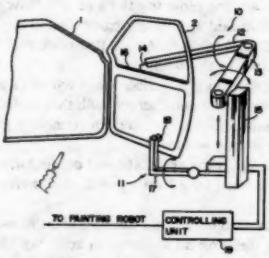
1. A high speed roll or blade method of coating a substrate comprising the step of applying to a substrate selected from the group consisting of paper, cardboard, films, yarns, fabrics and leather, an aqueous coating composition comprising an alkali-swellable associative thickener comprising (A) about 2 to about 70 weight percent, based on the total weight of associative thickener, of an alpha, beta-monoethylenically unsaturated carboxylic acid, (B) about 20 to about 80 weight percent of a monoethylenically unsaturated monomer lacking surfactant capacity, (C) about 0.5 to about 50 weight percent of a non-ionic urethane monomer that is the reaction product of a monohydric non-ionic surfactant and a monoethylenically unsaturated monoisocyanate, and (D) 0 to about 2 weight percent of a polyethylenically unsaturated monomer.

5,192,593

METHOD FOR PAINTING AUTOMOBILE DOORS BY SEQUENTIALLY HOLDING AND PAINTING PORTIONS OF THE DOOR

Hisashi Matsuo, and Jyunji Itoh, both of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jun. 25, 1991, Ser. No. 720,697
Claims priority, application Japan, Jun. 27, 1990, 2-68125; May 16, 1991, 3-111989
Int. Cl.[5] B05B 13/02; B05C 13/02; B05D 1/02; B25J 11/00
U.S. Cl. 427—421 2 Claims



1. A method of painting an automobile in an automated assembly line, comprising the steps of:

using an automated door opening and closing device to open an automobile door;

using the door opening and closing device engaging a first portion of the automobile door for maintaining the automobile door in an open state;

using a robot painting device to partially paint the held open automobile door in a region not including said first portion;

engaging a second portion of the automobile door with an automated door fixing unit so as to maintain the automobile door in an open state, the second portion being spaced from the first portion;

releasing the door opening and closing device from the automobile door; and

using the robot painting device to further paint the partially painted automobile door, while engaged by the fixing unit, in said first portion.

5,192,594

PROCESS FOR THE PREPARATION OF A POLYURETHANE STRUCTURAL SUPPORT

Sanjeev Madan, Corapolis; Hans-Joachim Kogelnik, Pittsburgh, both of Pa., and Majid Daneshvar, Leverkusen, Fed. Rep. of Germany, assignors to Miles Inc., Pittsburgh, Pa.

Filed Nov. 7, 1991, Ser. No. 788,891
Int. Cl.[5] B05D 1/02
U.S. Cl. 427—421 6 Claims

1. A process of preparing a polyurethane structural support comprising:

1) spraying a reaction mixture onto a substrate, said reaction mixture comprising:

A) a polyol mixture comprising:

1) from 50 to 95 parts by weight of a triol having an OH number of from 200 to 500 and being prepared by reacting propylene oxide with a member selected from the group consisting of glycerin, trimethylolpropane, and mixtures thereof, and

2) from 5 to 20 parts by weight of a triol having an OH number of from 20 to 50 and being prepared by reacting propylene oxide and ethylene oxide with a member selected from the group consisting of glycerin, trimethylolpropane, and mixtures thereof, said triol 3) having a primary hydroxyl content of from 50 to 90%,

3) from 0 to 30 parts by weight of a triglyceride of a fatty acid having an OH number of from 140 to 200, said parts by weight of 1), 2) and 3) totalling 100 parts by weight,

B) from 1 to 5 parts by weight per 100 parts by weight of component A) of an organic diamine having a molecular weight of from 60 to 2000,

C) from 1 to 10 parts by weight per 100 parts by weight of component A) of one or more additives to absorb moisture,

D) from 0 to 2 parts by weight per 100 parts by weight of component A) of one or more catalysts capable of catalyzing the reaction between an isocyanate group and a hydroxyl group,

E) at least 0.025 parts by weight per 100 parts by weight of component A) of one or more polysiloxane defoaming agents,

F) from 0 to 20 parts by weight per 100 parts by weight of component A) of glass fibers, and

G) an isocyanate terminated prepolymer prepared by reacting a polyisocyanate with a polyether polyol, said prepolymer having an NCO content of from 18 to 35% by weight, at an equivalent ratio of isocyanate groups to isocyanate reactive groups of from 0.70:1 to 1.2:1, and

2) allowing said reaction mixture to fully react.

5,192,595

METHOD FOR THE PRODUCTIVE UTILIZATION OF PAINT IN A PAINT SUPPLY LINE UTILIZING A CLEANING SLUG IN PRODUCTION PAINT OPERATIONS

Hadi A. Akeel, Rochester Hills, and Alexander H. Joyce, Livonia, both of Mich., assignors to GMFanuc Robotics Corporation, Auburn Hills, Mich.

Filed Aug. 13, 1991, Ser. No. 744,360
Int. Cl.[5] B05D 1/02; B05B 15/02
U.S. Cl. 427—421 5 Claims

1. A method for changing paint colors, cleaning and productively utilizing paint in a paint supply line in a paint system, the system having applicator means being fed with paint by the supply line, a first source of pressurized paint of a first color, a second source of pressurized paint of a second color, a source of pressurized air and a source of cleaning fluid adapted to be selectively connected to the supply line, interior walls of the supply line having a substantially constant inside diameter, the method comprising the steps of:

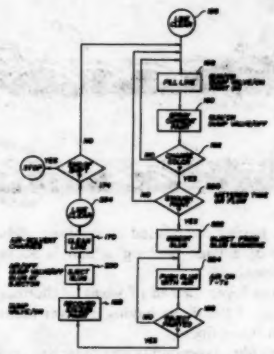
connecting the supply line to the first source of pressurized

paint to fill the supply line with the first color paint to allow the applicator means to paint an article;

disconnecting the supply line form the first source of pressurized paint when the remaining paint in the supply line is sufficient to complete the painting of the article;

inserting a termination piston having an exterior surface with an outside diameter which forms a close sliding fit within the supply line after the step of disconnecting;

propelling the termination piston through the supply line so as to cause the termination piston to wipe paint off the interior walls of the supply line by virtue of the termination piston being propelled through the supply line, thus feeding the paint in the supply line to the applicator means



until essentially no paint of the first color remains in the supply line;

removing the termination piston from the supply line after the step of propelling, then alternating the connection of the supply line between the source of pressurized air and the source of cleaning fluid to cause charges of cleaning fluid to be propelled through the supply line at a speed sufficient to cause the walls of the supply line to be washed clean of substantially all traces of paint of the first color; and

connecting the supply line to the second source of paint so as to fill the supply line with the second color paint to allow said applicator means to again paint an article.

5,192,596

LIQUID CRYSTAL DEVICE

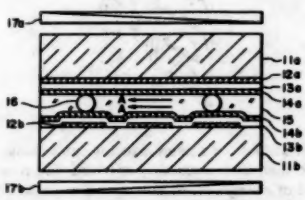
Yukio Hanyu, Atsugi, and Masanobu Asaoka, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 29, 1990, Ser. No. 529,509

Claims priority, application Japan, Jun. 2, 1989, 1-141395; Jun. 2, 1989, 1-141396; Jun. 22, 1989, 1-160278; Apr. 24, 1990, 2-109658

Int. Cl.[5] G02F *1/1337*

U.S. Cl. 428—1 **62 Claims**



1. A liquid crystal device, comprising:

a pair of substrates and a chiral smectic liquid crystal disposed between the substrates, said pair of substrates being disposed to have a spacing small enough to suppress the formation of a helical alignment structure of the chiral smectic liquid crystal;

wherein at least one of said pair of substrates has thereon an alignment film comprising a polyimide which has a fluorine-containing substituent in its diamine-originated moiety.

5,192,597

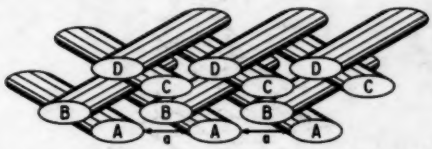
PROCESS FOR STAGED MULTIPLE YARN WINDING AND RESULTING PRODUCT

George D. Forsythe, Landenberg, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 21, 1990, Ser. No. 631,434

Int. Cl.[5] A47G *19/22*; B32B *1/08, 5/06, 5/22*

U.S. Cl. 428—34.5 **4 Claims**



1. A hollow cylindric al package having a wall through which gases flow, said wall formed of a plurality of layers of yarns laid down in a diamond shaped pattern wherein each layer is formed of a fixed small number of superposed yarns forming the walls of the diamonds and the yarns forming the walls of the diamonds of each layer completely cover the diamond shaped openings of each adjacent layer to form a series of diamond shaped openings, each layer of which interferes with direct flow of ga from one layer to the next layer, yet leave openings sufficient to provide for dividing and mixing of the gases flowing from one layer to the next layer.

5,192,598

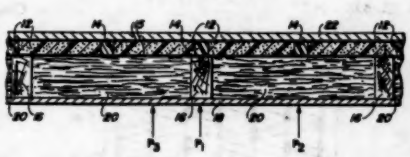
FOAMED BUILDING BOARD COMPOSITE AND METHOD OF MAKING SAME

Don A. Forte, Evergreen; Jeffrey T. Kates, and Dennis R. Larratt, both of Littleton, all of Colo., assignors to Manville Corporation, Denver, Colo.

Filed Sep. 16, 1991, Ser. No. 760,797

Int. Cl.[5] B32B *3/26*

U.S. Cl. 428—71 **30 Claims**



14. A building wall construction, comprising: exterior end faces and interior end faces;

thermal insulation between the side faces of the studs;

an interior wall panel attached to the interior end faces of the studs;

an exterior sheathing panel attached to the exterior end faces of the studs;

the sheathing panel having opposite major surfaces and being comprised of a first material which is relatively impermeable to water vapor and a plurality of spaced areas of a second material which is relatively permeable to water vapor, the areas of the second material extending from one major surface of the panel to the other, the sheathing panel surfaces between adjacent studs containing at least one area of the second material;

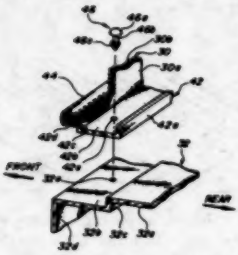
whereby water vapor is transmissible through the areas of the second material of the sheathing panel.

5,192,599

STRUCTURE FOR FIXING CARPET ON VEHICULAR FLOOR PANEL

Masabu Sakamoto, Kanagawa, Japan, assignor to Ikeda Bussan Co., Ltd., Ayase, Japan

Filed Sep. 24, 1991, Ser. No. 764,637
Claims priority, application Japan, Sep. 26, 1990, 2-100613[U]
Int. Cl.[5] B32B 3/02, 33/00, 23/02; A47G 27/04
U.S. Cl. 428—82 15 Claims



1. A structure for fixing a carpet on a vehicular floor panel, said structure comprising:

an edging member retainer for retaining a peripheral portion of said carpet on said floor panel, said retainer being fixed to said floor panel by a mechanical fastener and located below said carpet so as to be concealed by said carpet; and

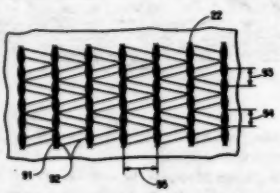
a covering member for covering a peripheral edge of said peripheral portion of said carpet and an edge portion of said retainer, said peripheral edge of said carpet and said edge portion of said retainer being sewn together with said covering member so as to secure said carpet to said retainer.

5,192,600

STITCHBONDED COMFORT FABRIC

Gene J. Pontrelli, Wilmington, and Dimitri P. Zafiropin, Greenville, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 27, 1990, Ser. No. 634,646
Int. Cl.[5] D04B 23/08
U.S. Cl. 428—102 15 Claims



1. A durable, nonwoven comfort fabric having a basis weight of from 20 to 120 grams per square meter, the fabric comprising:

(a) an absorbent, evaporation-reservoir layer formed from a nonwoven web that is stitched through with at least one bulkable stitching yarn that forms spaced-apart rows of stitches extending along the length of the web; and

(b) a nonabsorbent, transport layer weighing at least 10 grams per square meter and formed from a network of stitching yarns which are not significantly water absorbent and which are stitched through the web, the network exhibiting stitching gaps no wider than 3 millimeters,

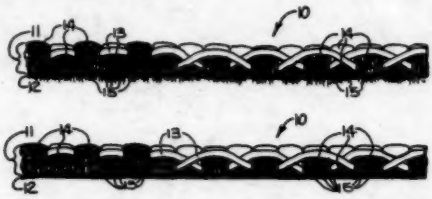
wherein the resulting dual-layered, stitchbonded fabric has a bulk of at least 10 cubic centimeters per gram and is capable of absorbing at least 5 times its weight in water.

5,192,601

DIMENSIONALLY STABILIZED, FUSIBLY BONDED MULTILAYERED FABRIC AND PROCESS FOR PRODUCING SAME

Henry P. Neisler, Kings Mountain, N.C., assignor to Dicey Fabrics, Incorporated, Shelby, N.C.

Filed Mar. 25, 1991, Ser. No. 674,703
Int. Cl.[5] B32B 7/00
U.S. Cl. 428—120 15 Claims



1. A fabric having the desired dimensional stability without the presence of a latex backing which is normally present thereon, comprising:

a woven first layer formed of yarns of thermoplastic fibers with some of the fibers having a lower melting temperature then other fibers;

a nonwoven fibrous second layer contacting said woven first layer in underlying relation; and

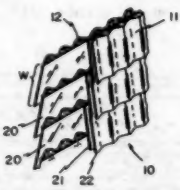
a plurality of thermoplastic fibers including said lower melting temperatures fibers being displaced from said woven first layer and extending into and through said nonwoven second layer, said displaced thermoplastic fibers being flattened against the distal side of said nonwoven second layer and fusibly bonded thereto to interconnect said woven first layer and said nonwoven second layer to each other.

5,192,602

LOUVERED FILTER AND PAINT ARRESTOR

Victor V. Spencer, deceased, late of Tillsonburg; by Mary Spencer, executrix, 4 Highland Drive, Tillsonburg, Ontario, both of Canada N4G 2E9 , and Leonid A. Bagrin, 257 Burlington Street, London, Ontario, Canada N5Z 3W3

Filed May 14, 1991, Ser. No. 699,657
Int. Cl.[5] B32B 3/28; B03C 11/11
U.S. Cl. 428—179 11 Claims



1. A filter suitable as a paint arrestor comprising:

a panel formed from a plurality of overlaying runs, each run formed of a single-faced corrugated material comprising, a flat substrate sheet and an overlaying corrugated sheet juxtaposed to the substrate sheet so that the two sheets define therebetween a family of channels each with an axis of said channel oriented at an acute angle relative to the medial plane of the panel.

5,192,603

PROTECTION OF SUBSTRATES AGAINST AQUATIC FOULING

William W. Slater; John Kelly, and Michael J. Winter, all of Houston, Tex., assignors to Courtaulds Coatings Inc., Houston, Tex.

Filed Sep. 13, 1991, Ser. No. 759,673
Int. Cl.[5] B32B 7/02, 27/40
U.S. Cl. 428—217 19 Claims

1. A process for protecting a rigid substrate against aquatic fouling comprising coating the substrate with an elastomeric undercoat as a 200 to 1500 micron thick layer and with a top coat of a room temperature vulcanizable silicone rubber, the elastomer of said undercoat being a polymer having the ability to be stretched to at least twice its original length and to retract rapidly, with retraction of at least 90% of extension, when released, said undercoat being harder than the room temperature vulcanizable silicone rubber top coat.

5,192,604

FIBRILLATED FIBERS AND ARTICLES MADE THEREFROM

Robert D. Giglia, Rye, N.Y., assignor to Amerian Cyanamid Company, Stamford, Conn.

Division of Ser. No. 408,587, Sep. 18, 1989, which is a division of Ser. No. 918,246, Oct. 14, 1986, Pat. No. 4,929,502. This application May 6, 1991, Ser. No. 696,467
Int. Cl.[5] B32B 9/00, 19/00; D04H 11/00
U.S. Cl. 428—224 3 Claims

1. A personal protection device incorporating a non-woven fabric material comprising a wet-laid sheet containing a fibrillated monoethylenically unsaturated monomer based fiber having a Canadian Standard Freeness of less than 100 in combination with a Tensile Strength of at least 5 pounds per inch.

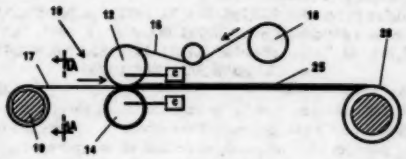
5,192,605

EPOXY RESIN BONDED FLEXIBLE GRAPHITE LAMINATE AND METHOD

Robert A. Mercuri, Seven Hills; Edwin J. Ohneth, North Olmsted, and Richard T. Lewis, Parma Heights, all of Ohio, assignors to UCAR Carbon Technology Corporation, Danbury, Conn.

Filed Oct. 1, 1991, Ser. No. 769,554
Int. Cl.[5] B32B 5/16, 15/08, 17/10, 27/38
U.S. Cl. 428—224 5 Claims

1. A flexible graphite laminate of flexible graphite and a core material composed of metal, fiberglass or carbon with the flexible graphite bonded to said core material through an intermediate coating of an epoxy resin composite comprising an epoxy resin having a glass transition temperature after cure of below 120° C. and particles of a thermoplastic agent dispersed in the epoxy resin and having a crystalline or partially crystalline structure and a melting temperature in the range of 120° C. and 200° C. with the laminate formed upon contact between said flexible graphite, said core material and a cured coating of



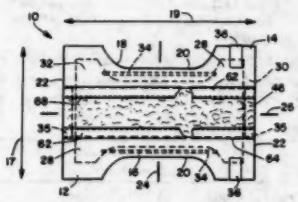
said epoxy composite upon reheating at a temperature equal to or above the melting temperature of said thermoplastic agent.

5,192,606

ABSORBENT ARTICLE HAVING A LINER WHICH EXHIBITS IMPROVED SOFTNESS AND DRYNESS, AND PROVIDES FOR RAPID UPTAKE OF LIQUID

Deborah L. Proxmire, Larsen, Wis.; Wanda W. Jackson, Alpharetta, Ga.; Nancy D. Kollin, Roswell, Ga.; Tamara L. Mace, Alpharetta, Ga.; Ann L. McCormack, Cumming, Ga., and Daniel R. Schlinz, Appleton, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Sep. 11, 1991, Ser. No. 757,778
Int. Cl.[5] B32B 5/06; D04H 1/00; A61F 13/15, 13/20
U.S. Cl. 428—284 49 Claims



1. An absorbent article, comprising:

a backsheet layer which has length and width dimensions and which includes a front waistband section, a rear waistband section, and an intermediate section interconnecting said front and rear waistband sections;

an absorbent body which is superposed on said backsheet layer;

a liquid permeable intermediate transfer layer which is disposed in facing relation with said absorbent body to generally sandwich said absorbent body between said backsheet and transfer layer, said transfer layer having an appointed inward surface and a width dimension which is substantially coextensive with said backsheet width over at least a portion of said backsheet intermediate section; and

a liquid permeable bodyside liner layer located on said inward surface of said transfer layer, said bodyside liner having a width dimension which is less than the width of said transfer layer, said body side liner comprising a bonded carded web which has a basis weight within the range of about 15–40 gsm and is composed of bicomponent fibers having a fiber denier within the range of about 1.0–3.0, said bodyside liner constructed to provide for a Penetration Rate index of at least about 1.5 ml/sec and a Retention index of not more than about 0.8 gm.

5,192,607

DISPERSANT FOR CARBON BLACK-FILLED FOAM

Thomas G. Soukup, Clearwater, Fla., assignor to The Celotex Corporation, Tampa, Fla. and Apache Building Products Company, Meridian, Miss.

Division of Ser. No. 823,100, Jan. 21, 1992, Pat. No. 5,137,930, which is a division of Ser. No. 751,393, Aug. 28, 1991, Pat. No. 5,149,722. This application Jul. 31, 1992, Ser. No. 922,419

Int. Cl.[5] B32B *3/26*; B05D *3/02*

U.S. Cl. 428—314.4 26 Claims

1. A laminate comprising at least one facing sheet adhered to a closed cell, rigid, polymer foam which comprises the reaction product of a polyisocyanate and an isocyanate-reactive compound in the presence of (a) a foaming agent, (b) at least about 2 percent by weight of carbon black, based on the weight of the polymer in the foam, and (c) an endcapped polyoxyalkylene compound which is nonreactive with isocyanate groups, and is present in an amount sufficient to help bring about a uniform dispersion of the carbon black throughout the foam so that there is present in the cell walls of the foam an amount of predominantly non-agglomerated carbon black which reduces the aged k-factor of the foam to below the aged k-factor of the corresponding unfilled foam having the same density and prepared from the same foam-forming composition as the filled foam except that the carbon black is omitted and the amount of foaming agent is adjusted to equalize the densities of the filled and unfilled foams.

5,192,608

VINYL BASED COATINGS

Scott Haasl, Coon Rapids, and Mark Kenow, Circle Pines, both of Minn., assignors to PDI, Inc., Circle Pines, Minn.

Filed Oct. 24, 1991, Ser. No. 781,861

Int. Cl.[5] B32B *27/00, 27/22, 27/30*

U.S. Cl. 428—319.7 2 Claims

1. Composite film forming formulation including a base coat formulation and a top coat formulation, wherein the working formulation for the base coat has the following formulation:

Component	Generic Description	Weight % Range
Plasticized vinyl chloride copolymer (plasticized with diethylhexyl phthalate), a synthetic latex containing 57% solids, balance water	Vinyl chloride copolymer	82.26%
Surfactant-defoamer	Polyglycol silane	.18%
N-butyl acetate	Ester-based solvent	4.84%
Slow evaporating coalescent	N-methyl pyrrolidone	2.67%
Acrylic-based emulsion	Acrylic-based emulsion containing acid carboxyl functional groups	.47%
Water	Used as solvent	balance;

and wherein the top coat formulation has the following composition:

Component	Generic Description	Weight % Range
Vinyl chloride-vinyl acetate copolymer resin	A mixture of vinyl chloride-vinyl acetate	10.43%
Xylene	Aromatic solvent	38.89%
Methylethyl ketone	Aliphatic solvent	35.08%
Methyl isobutyl ketone	Aliphatic solvent	10.43%
Plasticizers, polyester-based	Polyester plasticizer	1.94%
Phthalate ester	Phthalate esters	1.48%

-continued

Component	Generic Description	Weight % Range
Plasticizer		
Plasticizer/stabilizer	Epoxidized soybean oil	.56%
Stabilizer	Alkyl tin maleate	.27%
Light stabilizer	A hindered amine	.13%
UV absorber/stabilizer	Hydroxy-benzophenone	.07%
Unsaturated fatty monoamide derived from erucic acid	The unsaturated fatty monoamide of mono-ethenoid acid	.42%
Methyl alkyl polysiloxane copolymer for defoaming/slip properties	Methyl alkyl polysiloxane copolymer	.30.

5,192,609

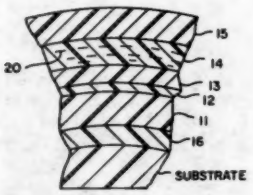
THERMOFORMABLE SHEET MATERIAL

John F. Carroll, Jr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 457,915, Dec. 27, 1989, abandoned, which is a continuation-in-part of Ser. No. 267,906, Nov. 7, 1988, Pat. No. 4,900,611. This application Jan. 13, 1992, Ser. No. 821,297

Int. Cl.[5] B32B *5/16, 7/12*

U.S. Cl. 428—328 17 Claims



1. A flexible and stretchable sheet material adapted for use in a thermoforming process in which it is stretched and bonded to a substrate to form thereon a decorative and protective surface having a high degree of geometric metamerism, said sheet material comprising:

a series of layers including (a) a stretchable, thermoplastic polymeric carrier film having heat-softenable and tensile elongation properties which adapt it to use in said thermoforming process and (b) a clear topcoat layer;

one of said series of layers being a dark colored layer which has an L* value less than about 60;

above said dark colored layer, a flake-containing layer which is light transmissive and comprises light-reflective flakes dispersed in a transparent film-forming binder;

the flake concentration in the flake-containing layer being sufficiently low that the dark colored layer is visible through the flake-containing layer and the topcoat; all of said layers having heat-softening and tensile elongation properties that are compatible with those of the carrier film; and

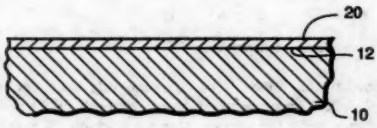
said sheet material being capable of stretching at least 100 percent during thermoforming and, when stretched, exhibiting a flop in areas stretched up to 100 percent at least equal to the flop of the unstretched material.

5,192,610

CORROSION-RESISTANT PROTECTIVE COATING ON ALUMINUM SUBSTRATE AND METHOD OF FORMING SAME

D'Arcy H. Lorimer, San Luis Obispo, and Craig A. Bercaw, Hayward, both of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Jun. 7, 1990, Ser. No. 534,796
Int. Cl.[5] B32B 15/04, 15/20
U.S. Cl. 428—33.6 20 Claims



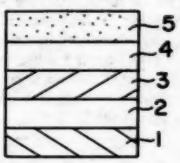
1. A corrosion-resistant protective coating on an aluminum substrate formed by contacting a high purity aluminum oxide layer on said aluminum substrate having a purity of at least about 97 wt. % aluminum oxide with one or more fluorine-containing gases at an elevated temperature ranging from about 375° C. to about 500° C., said aluminum oxide layer having a minimum thickness of at least about 0.1 micrometers (1000 Angstroms) prior to said contact with said one or more fluorine-containing gases.

5,192,611

PATTERNED FILM FORMING LAMINATED SHEET

Takeshi Tomiyama; Masahiro Endó; Sadaaki Hashimoto, and Kenji Maeda, all of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Hyogo, Japan

Continuation of Ser. No. 487,263, Mar. 2, 1990, Pat. No. 5,079,058. This application May 31, 1991, Ser. No. 708,862
Int. Cl.[5] B32B 5/16, 7/12, 15/04
U.S. Cl. 428—354 3 Claims



1. A patterned film-forming laminated sheet comprising a multi-layer construction prepared by successively laminating a release sheet layer, a pressure-sensitive adhesive layer, a plastic base sheet layer having a thickness of 30 to 120 μm, a primer layer and a patterned film layer, said patterned film layer being prepared by a process which comprises coating a fluid coating composition containing a powdery magnetic material comprising at least one selected from a group consisting of nickel, stainless steel having a high content or iron, iron and cobalt, on one side of the base sheet layer to form a fluid film, and acting a magnetic force on the powdery magnetic material contained in the fluid film in such a fluid state that the fluid film has a viscosity of 0.5–3 poise at 20° C. to form a pattern, the magnetic force being acted on the powdery magnetic material from behind the plastic base sheet layer by use of magnetic sheet having the same shape as that of the pattern to be formed or a shape to cover the back side of the plastic sheet layer, wherein a pigmented film layer is formed between the primer and the patterned film layer.

5,192,612

POSITIONABLE-REPOSITIONABLE PRESSURE-SENSITIVE ADHESIVE

James W. Otter, Geneva, and Gary R. Watts, Ashtabula, both of Ohio, assignors to Avery International Corporation, Pasadena, Calif.

Continuation-in-part of Ser. No. 429,719, Oct. 31, 1989, abandoned. This application Feb. 12, 1990, Ser. No. 478,675
Int. Cl.[5] C09J 7/02
U.S. Cl. 428—355 29 Claims

1. A laminate comprising a substrate and a layer of pressure-sensitive adhesive for adhering the laminate to a mounting surface, said pressure-sensitive adhesive containing a pressure-sensitive adhesive base resin, a detackifying resin and a detackifying particulate, said detackifying resin comprising a substantially linear polycaprolactone polymer having a molecular weight in the range of from about 3,000 to about 342,000, said detackifying resin and particulate interacting to increase the effectiveness of the particulate in raising the dynamic shear storage modulus of the pressure-sensitive adhesive to about 30×10^5 dynes/cm^2 or higher at 1 rad/sec at a temperature of 23° to 25° C. with a lesser decrease in ultimate peel strength as compared with a similar laminate except for the omission of said detackifying resin, and thereby reducing tack and suppressing adhesion build-up temporarily during installation of said laminate to said mounting surface and causing adhesion build-up subsequently due to the passage of time such that said laminate is permanently bonded to said mounting surface in about one week.

5,192,613

ELECTROGRAPHIC RECORDING ELEMENT WITH REDUCED HUMIDITY SENSITIVITY

Ray A. Work, III, Kennett Square, Pa.; Clifford E. Milner, Rochester, N.Y.; Sarah J. Kintner, Wilmington, Del.; James E. Genthe, Chillicothe, Ohio; Stephen Strella, Boca Raton, Fla., and Charles R. Iacovella, Monroe, N.Y., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 471,150, Jan. 26, 1990, abandoned. This application Nov. 30, 1990, Ser. No. 620,251
Int. Cl.[5] B32B 7/02; G01D 15/06
U.S. Cl. 428—363 36 Claims

1. An electrographic recording element with reduced sensitivity to humidity, comprising, in order:

(1) a base,

(2) a conductive layer comprising a continuous coating of an electroconductive composition, said electroconductive composition comprising:

(a) a polymeric binder and

(b) an electroconductive powder comprising particles being:

(i) hollow shells of amorphous silica or a silica-containing material, or

(ii) solid cores coated with amorphous silica or a silica-containing material, coated with a two-dimensional network of antimony-containing tin oxide crystallites in which the antimony content ranges from 1 to about 30% by weight of tin oxide; and

(3) a dielectric layer.

5,192,614

Patent Not Issued For This Number

5,192,615

COMPOSITION COMPRISING ENCAPSULATED SUBSTRATE AND THERMOPLASTIC POLYMER OVERCOATING

Lee A. McDougall, Houston; John C. Newlove, Kingwood, both of Tex.; Pacifico V. Manalastas, Edison, and Evelyn N. Drake, Bernardsville, both of N.J., assignors to Exxon Research & Engineering Company, Florham Park, N.J.

Division of Ser. No. 637,401, Jan. 4, 1991, Pat. No. 5,102,558, which is a continuation-in-part of Ser. No. 446,572, Dec. 4, 1989, abandoned, which is a continuation-in-part of Ser. No. 446,831, Dec. 6, 1989, abandoned, which is a continuation-in-part of Ser. No. 446,958, Dec. 6, 1989, abandoned. This application Jan. 3, 1992, Ser. No. 816,912

The portion of the term of this patent subsequent to Apr. 7, 2009, has been disclaimed.

Int. Cl.[5] B32B *27/06, 27/00*

U.S. Cl. 428—402.24 6 Claims

1. An encapsulated particulate composition comprising:

(a) a solid particulate substrate;

(b) a coating substantially free of pinholes comprising a neutralized sulfonated elastomeric polymer having a thickness of at least about 1 micron deposited on the surface of particles of said substrate, wherein said neutralized sulfonated polymer encapsulates said substrate, wherein said neutralized sulfonated polymer is permeable to said substrate at conditions of use and said neutralized sulfonated polymer is non-reactive to said substrate, and

(c) a layer of thermoplastic polymer overcoating said coating.

5,192,616

MACROMOLECULAR MONOMERS FROM LIVING POLYMERS

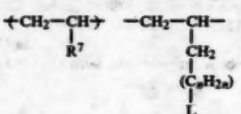
Gaddam N. Babu, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 614,307, Nov. 15, 1990, Pat. No. 5,104,952. This application Oct. 10, 1991, Ser. No. 775,684

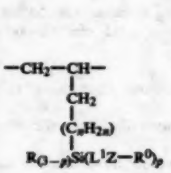
Int. Cl.[5] B32B *27/08;* C08F *30/08, 236/20*

U.S. Cl. 428—407 9 Claims

1. A graft copolymer comprising units having the formula



and



wherein

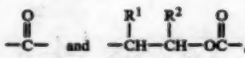
R^8 is a saturated or unsaturated, linear hydrocarbyl group having 2 to 20 carbon atoms, a branched hydrocarbyl group having 3 to 20 carbon atoms, or a cyclic hydrocarbyl group having 5 to 20 carbon atoms;

n is an integer having a value from 0 to 16;

p is an integer having a value of 1, 2, or 3;

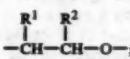
R is independently a monovalent hydrocarbyl group which is selected from alkyl groups having from 1 to 18 carbon atoms, aryl groups having from 6 to 10 carbon atoms, and cyclic hydrocarbyl groups having from 5 to 10 carbon atoms;

L is a vidalent linking group selected from the group consisting of



in which each R^1 and R^2 is independently hydrogen, a C_1 to C_4 alkyl group, phenyl group, or both of R^1 and R^2 together with the carbon atoms to which they are attached form a ring having 5 or 6 carbon atoms;

L^1 is a covalent bond or a divalent linking group



ZX is a divalent polymeric group derived from either or both of polymerizable ethenylarene and conjugated diene monomers;

and R^7 is hydrogen or an alkyl group having 1 to 16 carbon atoms.

5,192,617

TRANSPARENT LIQUID ABSORBENT MATERIALS

John J. Stofko, Jr., St. Paul, Minn., and Mohammad Iqbal, Austin, Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 602,481, Oct. 24, 1990, Pat. No. 5,134,198. This application Jun. 4, 1992, Ser. No. 893,915

Int. Cl.[5] B32B *9/04*

U.S. Cl. 428—411.1 22 Claims

1. A transparent film comprising a transparent backing bearing on at least one major surface thereof a layer formed from a composition comprising (a) a polymeric matrix component comprising crosslinked tertiary amino moieties and carboxyl moieties said matrix component having one carboxyl moiety for each amino moiety that has been crosslinked, and (b) a liquid-absorbent component comprising a water-absorbent polymer that is not crosslinked.

5,192,618

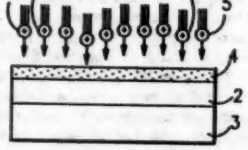
CORROSION PROTECTION BY FEMN BY ION IMPLANTATION

Gerald S. Frankel, Ossining; Igor Y. Khandros, and Peter B. Madakson, both of Peekskill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 26, 1991, Ser. No. 692,349

Int. Cl.[5] B32B *15/04;* G11B *5/127, 5/66;* B05D *5/12*

U.S. Cl. 428—457 30 Claims



1. A highly corrosion resistant and wear resistant FeMn film comprising a layer of FeMn and at least one protective layer

formed at a surface of said FeMn layer by implanting ions of two reactive elements into the surface, said reactive elements being capable upon subsequent annealing to form, from the combination of said two reactive elements, said at least one protective layer, wherein one of said two reactive elements is selected from the group consisting of chromium, titanium, silicon and aluminum and the other reactive element is selected from the group consisting of nitrogen, carbon and oxygen.

5,192,619

FLEXIBLE COPPER-APPLIED SUBSTRATES

Shiro Konotsune, Yokosuka; Kazutsune Kikuta; Masaya Uetsuki, both of Yokohama, and Hiroaki Hase, Kawasaki, all of Japan, assignors to Chisso Corporation, Osaka, Japan

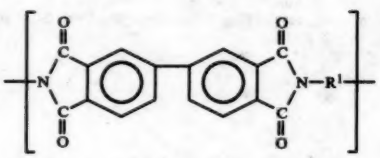
Continuation of Ser. No. 367,255, Jun. 16, 1989, abandoned. This application Nov. 4, 1991, Ser. No. 787,624

Claims priority, application Japan, Jun. 30, 1988, 63-162982; Aug. 29, 1988, 63-214185

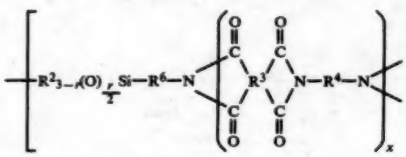
Int. Cl.[5] B32B *15/08, 27/06;* C08G *77/04*

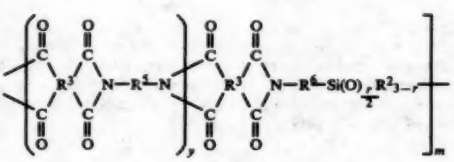
U.S. Cl. 428—458 **8 Claims**

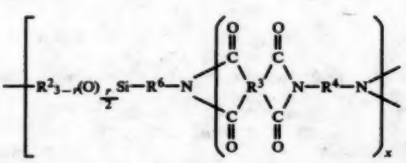
1. A flexible copper-applied substrate having curling properties of at least 25 cm indicated with a curvature radius of the substrate having a size of 10 cm by 10 cm which comprises a copper foil and a resin layer comprising a composite material of a polyimide having a repeating unit represented by the general formula (I) and a polyimide silicone having a repeating unit represented by the following general formula (II), said resin layer being directly formed on the surface of the copper foil:



(I)

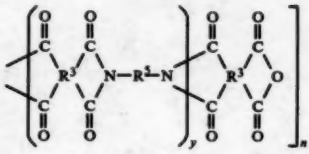






-continued

(II)



wherein R^1 is an aromatic hydrocarbon group of

R^2 is an aliphatic hydrocarbon group having 5 or less carbon atoms or an aromatic hydrocarbon group having 9 or less carbon atoms, R^3 is a tetravalent aromatic hydrocarbon group, R^4 is a divalent aromatic hydrocarbon group, R^5 is divalent siloxane chain, R^6 is a divalent aliphatic hydrocarbon group having 3 to 5 carbon atoms or a divalent aromatic hydrocarbon group having 6 to 9 carbon atoms, Y is —O—, —CO—, —SO_2— or —CH_2, r is 2 or 3, x:y is 97:3 to 60:40 and m:n is 50–100:50–0.

5,192,620

METALLIZED COMPOSITE FILM STRUCTURE AND METHOD

Shaw-Chang Chu, Cranbury, N.J., and James A. Johnson, Farmington, N.Y., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Nov. 8, 1991, Ser. No. 789,560

Int. Cl.[5] B32B *15/08*

U.S. Cl. 428—461 **8 Claims**

1. A metallized film combination comprising an oriented polymer substrate layer of polypropylene or a copolymer thereof which substrate is susceptible, in unmodified form, to transmitting oxygen and moisture, at least one surface of which having a layer of a blend of (a) a polyvinyl alcohol homo or copolymer and (b) an ethylene-acrylic acid copolymer; and the surface of said layer blend having a metal layer thereon.

5,192,621

ARTICLES CONTAINING SIDE CHAIN POLYMERIC ULTRAVIOLET PROTECTING AGENTS

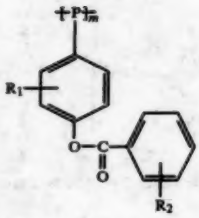
Gunilla E. Gillberg-Laforce, Summit, and Josefina L. Pruksarnukul, Montclair, both of N.J., assignors to Hoechst Celanese Corp., Somerville, N.J.

Division of Ser. No. 646,965, Jan. 28, 1991, Pat. No. 5,145,928. This application Apr. 9, 1992, Ser. No. 865,427

Int. Cl.[5] B32B *27/06*

U.S. Cl. 428—480 **6 Claims**

1. A polyester substrate coated with a composition comprising polymers that contain, in their side chains, 4-benzoyloxyphenyl moieties, and being represented by the formula:



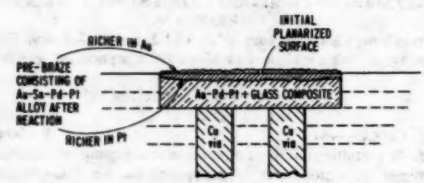
wherein P is the polymer main chain unit, R_1 numbers from 1 to 4 substituents, could be the same or different, and is selected from the group consisting of H, alkyl containing from 1 to 6 carbon atoms, cycloalkyl containing from 4 to 6 carbon atoms, and aralkyl containing from 7 to 10 carbon atoms; and R_2 numbers from 1 to 5 substituents, could be the same or different, and is selected from the group consisting of OH, SO_3H, H, alkyl containing from 1 to 6 carbon atoms, cycloalkyl containing from 4 to 6 carbon atoms, and aralkyl containing from 7 to 10 carbon atoms and m ranges from about 50 to 500.

5,192,622

LOW-COST TERNARY COMPOSITE FOR USE IN VIAS IN GLASS-CERAMIC STRUCTURES

Armando S. Cammarano, Hyde Park; Giulio DiGiacomo, Hopewell Junction, and Nunzio DiPaolo, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 9, 1991, Ser. No. 743,439
Int. Cl.[5] B22F *3/00, 5/00, 7/00*
U.S. Cl. 428—551 **7 Claims**



1. A precious metal alloy/glass composite for use in vias in glass-ceramic electronic structures, comprising:

an alloy including gold, palladium, and a metal selected from the group consisting of platinum and silver, where the gold ranges between 5 and 50% by weight of said alloy; and

a glass, said glass being mixed with said alloy to form a precious metal alloy/glass composite, said glass ranges between 5 and 50% by volume of said precious metal alloy/glass composite.

5,192,623

LAMINATED STRUCTURAL PANELS AND THE METHOD OF PRODUCING THEM

Ytzhak Gewelber, La Mirada, Calif., assignor to Lockhart Industries, Paramount, Calif.

Continuation of Ser. No. 602,011, Oct. 23, 1990, abandoned. This application Jul. 16, 1992, Ser. No. 917,511
Int. Cl.[5] B32B *3/12, 3/30*
U.S. Cl. 428—593 **25 Claims**

1. A method of producing laminated structural panels comprising the steps of:

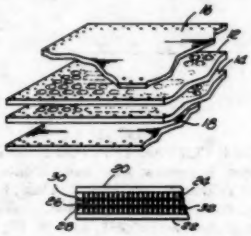
a) starting with a plurality of sheets of sheet metal perforated with a desired pattern;

b) providing imperforate top and bottom metal sheets;

c) providing brazing material at the interface between said metal sheets;

d) stacking said sheets with said perforated sheets aligned to provide desired areas of contact with the unperforated parts thereof and placed between said top and bottom sheets;

e) placing said stack in an oven and subjecting it to an initial



vacuum of at least 200 microns and backfilling said oven with an inert gas;

f) increasing the vacuum to approximately 1×10^{-5} Torr and increasing temperature to an amount sufficient to braze said stacked sheets and vacuum seal the panels;

g) permitting the stack to cool in said oven to a temperature significantly below said brazing temperature; and

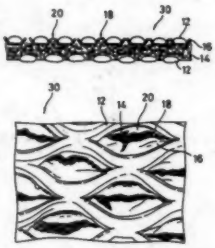
h) removing said stack from said oven.

5,192,624

SOUND ABSORBING MATERIALS

Toru Morimoto, Chiba, Japan, assignor to Unix Corporation Ltd., Tokyo, Japan, a part interest

Filed Apr. 12, 1991, Ser. No. 688,996
Claims priority, application Japan, Apr. 26, 1990, 2-111488; Nov. 30, 1990, 2-334299
Int. Cl.[5] B32B *3/24, 5/02, 15/14;* E04B *1/82*
U.S. Cl. 428—596 **15 Claims**



8. A sound absorbing material comprising an aluminum base expanded metal and/or an aluminum base metal screen which are laminated with an aluminum base metal fiber layer and an aluminum base metal foil that has ruptures adapted to be vibrated by sound waves.

5,192,625

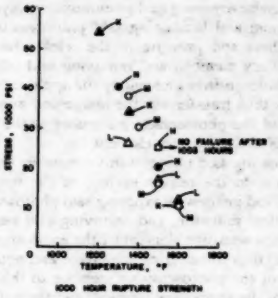
COBALT-BASE WROUGHT ALLOY COMPOSITIONS AND ARTICLES

Marvin Fishman, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 28, 1990, Ser. No. 486,531
Int. Cl.[5] C22C *30/00;* B32B *15/00*
U.S. Cl. 428—668 **4 Claims**

4. A composite article in the form of a hot stage gas turbine

engine component coated locally with a layer of a cobalt-base alloy consisting essentially of about 29% chromium, about



20% nickel, about 6% tantalum, about 0.75% of cerium and about 0.05% carbon, remainder cobalt.

5,192,626

OPTICAL RECORDING MEDIUM

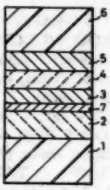
Masahiko Sekiya, Hino; Takayuki Ishizaki, Toyonaka, and Kiyoshi Chiba, Chofu, all of Japan, assignors to Teijin Limited, Osaka, Japan

Continuation of Ser. No. 447,172, Dec. 7, 1989, abandoned. This application Jun. 13, 1991, Ser. No. 715,024

Claims priority, application Japan, Dec. 14, 1988, 63-313751; Dec. 28, 1988, 63-328851; Jun. 1, 1989, 1-137382

Int. Cl.[5] G11B *5/66*

U.S. Cl. 428—694 **16 Claims**



1. An optical recording medium, comprising a substrate, a transparent dielectric layer as a protecting and/or enhancing layer, and an optical recording layer, wherein said transparent dielectric layer is amorphous, and consists of an oxide of at least one metal selected from the group consisting of indium, tin and tantalum, said oxide further consisting of at least one element selected from the group consisting of nitrogen and bismuth.

5,192,627

CLOSED LOOP REACTANT/PRODUCT MANAGEMENT SYSTEM FOR ELECTROCHEMICAL GALVANIC ENERGY DEVICE

John H. Perry, Jr., Riviera Beach; Abraham Person, Palm Beach Shores; Steven M. Misiaszek, Tequésta, and Donald P. Alessi, Jr., Lake Park, all of Fla., assignors to Energy Partners, Inc., West Palm Beach, Fla.

Continuation of Ser. No. 612,350, Nov. 13, 1990, Pat. No. 5,047,298. This application Aug. 2, 1991, Ser. No. 739,627

The portion of the term of this patent subsequent to Sep. 10, 2008, has been disclaimed.

Int. Cl.[5] H01M *8/04*

U.S. Cl. 429—17 **12 Claims**

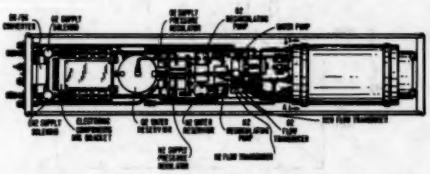
1. A closed loop reactant/product management system for electrochemical galvanic energy devices, the system comprising:

a) a modular package comprising a plurality of galvanic cells, two internal gas flow conduit means for independently carrying each of two gaseous reactants, which form a liquid product within the galvanic cells, and an internal liquid flow conduit means for independently carrying a cooling liquid to the galvanic cells, the cooling liquid being derived from the liquid product;

b) first and second gas supply connecting means each designed to provide make-up gaseous reactants, respectively, to the system;

c) indirect heat exchanger means in fluid flow connection with the internal liquid flow conduit means;

d) first and second liquid-gas separator means and first and second liquid reservoir means, the respective separator means and reservoir means being in open fluid flow connection, each of the reservoir means being designed to



provide a liquid-free, gas-filled space in an upper portion thereof and to maintain liquid in the lower portion, the first reservoir means being in pressure-tight fluid flow connection with the heat exchanger means and with the respective internal liquid flow passage, each of the first and second reservoir means being in pressure-tight fluid flow connection with the respective first and second gas supply connecting means, and the first and second liquid-gas separator means being in pressure tight fluid flow connection with the respective gas flow conduit means; and

respective means located in said first and second gas supply connecting means between each of said first and second reservoir means and said internal gas flow conduit means, said respective means functioning to regulate flow rate in said first and second gas supply means.

5,192,628

ALKALINE ELECTROLYTE FOR GALVANIC ELEMENTS

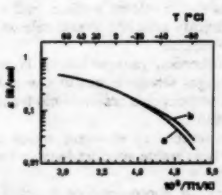
Heinz P. Fritz, Garching, and Heinz Frassdorf, Landshut, both of Fed. Rep. of Germany, assignors to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Oct. 18, 1991, Ser. No. 779,058

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1990, 4033102

Int. Cl.[5] H01M *6/14*

U.S. Cl. 429—190 **10 Claims**



1. An alkaline electrolyte for galvanic elements, wherein the electrolyte contains substances with a gelling or adsorption capability, and wherein the electrolyte is immobilized by an addition selected from the group consisting of magnesium hydroxide and basic magnesium salts combined with lye or an

aqueous potassium carbonate solution in a proportion by weight of from about 1:0.5 to about 1:2.

5,192,629

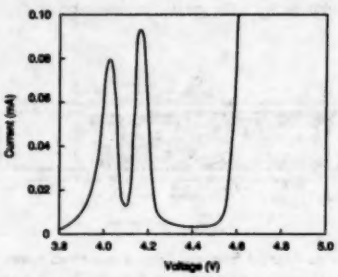
HIGH-VOLTAGE-STABLE ELECTROLYTES FOR $LI_{1+x}MN_2O_4$/CARBON SECONDARY BATTERIES

Dominique Guyomard, Middletown, and Jean-Marie Tarascon, Martinsville, both of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Filed Apr. 21, 1992, Ser. No. 871,855

Int. Cl.[5] H01M *10/40*

U.S. Cl. 429—197 **19 Claims**



1. A high-voltage-stable electrolyte for a lithiated intercalation secondary battery, said electrolyte consisting essentially of about a 0.5 to 2M solution of a solute selected from the class consisting of:

a) $LiPF_6$; and

b) mixtures of $LiPF_6$ with up to about equal mole parts of $LIBF_4$,

dissolved in a mixture of non-aqueous dimethylcarbonate (DMC) and ethylene carbonate (EC) solvents wherein said solvents are present in a weight percent ratio range from about 95 DMC:5 EC to 20 DMC:80 EC.

5,192,630

IMAGE TRANSFER TO DIVERSE PAPER STOCKS

Stephan J. W. Platzer, Califon, N.J., assignor to Hoechst Celanese Corporation, Somerville, N.J.

Division of Ser. No. 513,016, Apr. 23, 1990, Pat. No. 5,094,931, which is a continuation of Ser. No. 328,729, Mar. 23, 1989, abandoned, which is a continuation of Ser. No. 38,739, Apr. 15, 1987, abandoned. This application Nov. 25, 1991, Ser. No. 798,309

Int. Cl.[5] G03C *1/68, 11/12*

U.S. Cl. 430—11 **21 Claims**

1. An article which is a colored image on a permanent support, which article is prepared by the method which comprises:

A) providing a photosensitive element which comprises, in order;

a substrate having a release surface; and a photosensitive member directly attached to said release surface, which member comprises

a colored, adherent, photosensitive layer, which layer comprises light sensitive, positive working or negative working compound; a resinous binder and at least one colorant; and

B) providing a temporary element, which comprises a dimensionally heat stable support having a release surface;

C) either

i) laminating said photosensitive member with heat and pressure to the release surface of the temporary element; and removing said substrate from the photosensitive element by the application of peeling forces thus transferring the photosensitive member to the release surface of the temporary element; and imagewise exposing said photosensitive layer to actinic radiation to thereby form image and non-image portions of the photosensitive member on the release surface of the temporary element; or

ii) imagewise exposing said photosensitive layer to actinic radiation; and laminating said photosensitive member with heat and pressure to the release surface of the temporary element; and removing said substrate from the photosensitive element by the application of peeling forces thus transferring the image and non-image portions of the photosensitive member to the release surface of the temporary element; or

iii) laminating said photosensitive member with heat and pressure to the release surface of the temporary element; and imagewise exposing said photosensitive layer to actinic radiation; and removing said substrate from the photosensitive element by the application of peeling forces, thus transferring the image and non-image portions of the photosensitive member to the release surface of the temporary element; and thereafter

D) removing the nonimage areas of said photosensitive layer with a liquid developer, thereby providing a colored image on the release surface of the temporary element; and

E) providing a protective element, which element consists essentially of a dimensionally heat stable base having a release surface on which release surface is applied an adhesive; and

F) laminating said protective element to said colored image via said adhesive; and

G) removing the support of the said temporary element thereby transferring said image to said protective element and uncovering at least a portion of an adhesive layer; and laminating the protective element via said uncovered adhesive layer to a permanent support.

5,192,631

VARIABLE ELECTROCONDUCTIVITY MATERIAL

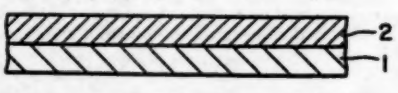
Eiichi Inoue, Setagaya; Atsumi Noshiro, Chiba, and Minoru Utsumi, Yokohama, all of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Division of Ser. No. 274,938, Jan. 4, 1989, Pat. No. 4,997,593. This application Oct. 9, 1990, Ser. No. 594,026

Claims priority, application Japan, Mar. 18, 1987, 62-61350; PCT Int'l Appl., Mar. 17, 1988, PCT/JP88/00277

Int. Cl.[5] G03G *5/06*

U.S. Cl. 430—56 **10 Claims**



1. A recording material comprising an electrically conductive electrode material and a memorizable converting layer comprising a variable electroconductivity material exhibiting electronic charge conduction, said memorizable converting layer being formed on said electrically conductive electrode material, wherein said variable electroconductivity material comprises:

(a) an electroconductivity variation imparting agent which changes its ionic structure when exposed to light or heat energy, reversibility or irreversibly between nonionic and ionic structures, said electroconductivity variation imparting agent comprising at least one component selected from the group consisting of spiropyrane compounds, diazonium compounds, derivatives thereof, a mixture of a leuco dye and a halide compound, and an ionic dye; and

(b) a charge transport substance, the electroconductivity of which varies in relation to the ionic structural change of said electroconductivity variation imparting agent, said

charge transport substance comprising at least one component selected from the group consisting of an organic or inorganic charge transport material, a π-electron conjugated polymer, and a charge-transfer complex compound.

5,192,632
ELECTROPHOTOGRAPHIC BISAZO PHOTOSENSITIVE MEMBER, AND ELECTROPHOTOGRAPHIC APPARATUS AND FACSIMILE EMPLOYING THE SAME

Satomi Ohmura, Kawasaki, and Yoshio Kashizaki, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

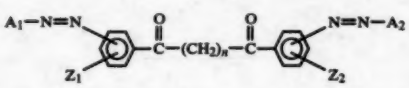
Filed Jul. 29, 1991, Ser. No. 737,015
Claims priority, application Japan, Jul. 30, 1990, 2-199308
Int. Cl.[5] G03G *5/06, 5/09, 15/00*; H04N *1/23*
U.S. Cl. 430—58 **19 Claims**

1. An electrophotographic photosensitive member comprising an electroconductive support and a photosensitive layer formed thereon, said photosensitive layer comprising

(a) a charge-generating layer containing a compound of the general formula (1) and a charge-transporting layer, or

(b) a layer containing a compound of the general formula (1) and a charge-transporting substance,

wherein the compound of the general formula (1) is represented below:



(1)

wherein Z_1 and Z_2 are each independently a hydrogen atom, an alkyl group, a halogen atom, an alkoxy group, a nitro group, a cyano group, or a trifuluromethyl group; A_1 and A_2 are each a coupler residue having a phenolic hydroxyl group, which may be the same or different; and n is an integer of 1 or 2.

5,192,633
LAMINATE TYPE PHOTOSENSITIVE MATERIAL FOR ELECTROPHOTOGRAPHY

Hiroaki Iwasaki, Hirakata; Youichi Takesawa, Suita; Hiroshi Takemoto, Osaka; Masashi Tanaka, Kishiwada; Keizo Kimoto, Hirakata, and Tadashi Sakuma, Sakai, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 521,345, May 9, 1990, abandoned. This application Sep. 20, 1991, Ser. No. 763,150
Claims priority, application Japan, May 9, 1989, 1-114308; Nov. 30, 1989, 1-313645
Int. Cl.[5] G03G *5/047*
U.S. Cl. 430—59 **10 Claims**

1. A laminate type photosensitive material for electrophotography, which comprises a charge-generating layer comprising a charge-generating material and a charge-transporting layer, which layers are formed on an electroconductive substrate, wherein the charge-transporting layer comprises a first charge-transporting material having an ionization potential smaller than that of the charge-generating material in the charge-generating layer and a second charge-transporting material having an ionization potential larger than that of the charge-generating material, wherein the differences of the ionization potentials of the first and second charge-transporting materials from the ionization potential of the charge-generating material are within ±0.2 eV and said first and second charge-transporting materials are used in such amounts that the first charge-transporting material/second charge-transporting material weight ratio is from 10/90 to 90/10.

9. The photosensitive material for electrophotography according to claim 1, wherein the charge-generating material is selected from the group consisting of phthalocyanine pigment, perylene pigment, quinacridone pigment, pyranthrone pigment, disazo pigment and trisazo pigment and the charge-transporting materials are selected from the group consisting of stilbene, N,N'-bis(o,p-dimethylphenyl)-4,4'-(diphenyl) benzidine, 1,1-bis(p-diethylaminophenyl)-N,N'-diphenylhydrazone, N,N-diethylaminobenzaldehyde-N,N-diphenylhydrazone, N,N-dimethylaminobenazldehyde-N,N-diphenylhydrazone, N-methyl-N-phenylaminobenazldehyde-N,N-diphenylhydrazone, 4-diphenylamino-α-phenylstilbene, triphenylamine, and 4-(N,N-diethylamino)benzaldehyde-N,N-diphenylhydrazone.

5,192,634
A-SELENIUM-TELLURIUM PHOTOSENSITIVE MEMBER AND ELECTROSTATIC INFORMATION RECORDING METHOD

Kohji Ichimura, and Minoru Utsumi, both of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan

Filed Feb. 7, 1991, Ser. No. 652,189
Claims priority, application Japan, Feb. 7, 1990, 2-28694; Jul. 11, 1990, 2-183564
Int. Cl.[5] G03G *5/085*
U.S. Cl. 430—85 **4 Claims**

1. An electrostatic information recording method, characterized in that a photosensitive member comprises an electric charge injection preventive layer, an a-selenium-tellurium mixed vacuum evaporation layer having tellurium concentration within the range of 20–50 wt % with uniform concentration on the vacuum-deposited surface and having thickness of 0.03–0.2 μm, and an electric charge transport layer of 30 μm thick sequentially laminated on a transparent electrode layer, that said photosensitive member is placed face-to-face to an electric charge carrying medium comprising an electrode layer and an electric charge retaining layer on optical axis, and that electrostatic latent image corresponding to the incident light image is formed on the electric charge carrying medium by performing exposure under voltage application between two electrodes or by applying voltage under exposure.

5,192,635
FLUORINE-CONTAINING COPOLYMERS AND CARRIERS FOR DEVELOPING ELECTROSTATIC IMAGES

Hiroshi Inukai; Takahiro Kitahara; Kayoko Sugioka, and Morio Mizuguchi, all of Settsu, Japan, assignors to Daikin Industries, Ltd., Japan

Filed Jun. 12, 1991, Ser. No. 713,855
Claims priority, application Japan, Jun. 12, 1990, 2-154355
Int. Cl.[5] G03G *9/00*; B32B *23/02, 27/02, 27/02*
U.S. Cl. 430—108 **7 Claims**

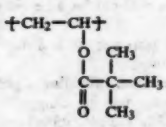
1. A carrier for developing electrostatic image, the carrier comprising a core and coating on the core, the coating being formed from a copolymer comprising:

(a) 50 to 85 mole % of a structural unit represented by the formula

(b) 5 to 40 mole % of a structural unit represented by the formula

wherein X is H or F, and

(c) 3 to 18 mole % of a structural unit represented by the formula



5,192,636

TONER AND A PROCESS FOR PREPARING THEREOF

Masanao Kunugi; Hidenori Kin, and Tsuneo Handa, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Aug. 16, 1990, Ser. No. 568,465
Claims priority, application Japan, Aug. 18, 1989, 1-212605; May 17, 1990, 2-127408; May 17, 1990, 2-127409
Int. Cl.[5] G03G 9/087
U.S. Cl. 430—109 10 Claims

1. A toner material for use in a dry electrophotographic process, said toner material comprising mono-component toner particles for use in developing a latent electrostatic image on the surface of a receptor in which external electrostatic field lines extend above the receptor surface along the periphery of said latent image, each of said toner particles containing at least a colorant and a binder, each of said toner particles having sufficient electrical resistance to enable it to be stably charged and transferred with the aid of the external field lines to the receptor surface, each of said toner particles further comprising an inside portion having a relatively high permittivity and an outside portion having a relatively low permittivity, the respective permittivities of said inside and outside portions being such as to provide toner material within proximity of the receptor with the ability to modify the electric field lines extending above said latent image whereby the toner material may be used to promote development of a central portion of the image.

5,192,637

ELECTROPHOTOGRAPHIC TONER COMPOSITION

Susumu Saito; Takashi Imai; Satoshi Inoue, and Yutaka Sugizaki, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jun. 5, 1991, Ser. No. 710,617
Claims priority, application Japan, Jun. 6, 1990, 2-146254
Int. Cl.[5] G03G 9/087
U.S. Cl. 430—109 15 Claims

1. An electrophotographic toner composition comprises a toner particle and an additive, wherein said toner particle comprises at least a binder resin and a colorant, and said additive is an amorphous titania particle subjected to a surface treatment using a coupling agent.

5,192,638

TONER FOR USE IN COMPOSITIONS FOR DEVELOPING LATENT ELECTROSTATIC IMAGES, METHOD OF MAKING THE SAME, AND LIQUID COMPOSITION USING THE IMPROVED TONER

Benzion Landa, Edmonton, Canada; Peretz Ben-Avraham; Joseph Hall, both of Rehovot, Israel, and George A. Gibson, Endwell, N.Y., assignors to Spectrum Sciences B.V., The Hague, Netherlands

Division of Ser. No. 394,141, Aug. 16, 1989, Pat. No. 5,047,307, which is a continuation of Ser. No. 287,840, Dec. 21, 1988, abandoned, which is a division of Ser. No. 157,122, Feb. 10, 1988, Pat. No. 4,794,651, which is a continuation of Ser. No. 45,168, Apr. 24, 1987, abandoned, which is a continuation of Ser. No. 679,906, Dec. 10, 1984, abandoned, which is a continuation-in-part of Ser. No. 242,242, Sep. 9, 1988, abandoned. This application Sep. 9, 1991, Ser. No. 756,641
The portion of the term of this patent subsequent to Sep. 10, 2008, has been disclaimed.
Int. Cl.[5] G03G 9/13
U.S. Cl. 430—137 8 Claims

1. A method of producing toner particle for a liquid toner, comprising the steps of:

(a) plasticizing a thermoplastic polymer with a non-polar liquid at an elevated temperature;

(b) cooling the plasticized material and forming a polymer particle having a size suitable for wet grinding;

(c) adding more non-polar liquid to the plasticized material;

(d) wet-grinding the plasticized material; and

(e) continuing the grinding process to pull the particles apart to form fibers extending therefrom.

5,192,639

LIGHT-SENSITIVE MATERIAL CONTAINING SILVER HALIDE, REDUCING AGENT, POLYMERIZABLE COMPOUND AND CHROMIUM MOLYBDENUM OR TUNGSTEN COMPOUND

Hiroyuki Hirai, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 10, 1991, Ser. No. 774,483
Claims priority, application Japan, Oct. 11, 1990, 2-272878
Int. Cl.[5] G03C 1/72, 1/725
U.S. Cl. 430—138 15 Claims

1. A light-sensitive material comprising a support and a light-sensitive layer provided thereon, which contains silver halide, a reducing agent and an ethylenically unsaturated polymerizable compound,

wherein the light-sensitive layer further contains a chromium (VI) compound, a molybdenum (VI) compound or a tungsten (VI) compound.

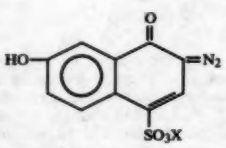
5,192,640

PROCESS FOR PREPARING 7-HYDROXY-1,2-NAPHTHOQUINONE-2-DIAZIDE-4-SULFONIC ACID OR SALTS THEREOF

Siegfried Scheler, Wiesbaden; Gerhard Buhr, Koenigstein, and Klaus Bergmann, Mainz-Bretzenheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 9, 1990, Ser. No. 564,643
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1989, 3926774
The portion of the term of this patent subsequent to Dec. 3, 2008, has been disclaimed.
Int. Cl.[5] G03F 7/022; G07C 309/35, 245/12
U.S. Cl. 430—169 16 Claims

1. A process for preparing a compound of the formula Z



Z

in which X=hydrogen, a metal or an ammonium group, comprising the steps of:

1) nitrosating 2,7-dihydroxynaphthalene;

2) sulfonating the resulting 2,7-dihydroxy-1-nitrosonaphthalene (I) with an alkali metal hydrogen sulfite and reducing the bisulfite addition compound formed in acidic solution to 2,7-dihydroxy-1-aminonaphthalene-4-sulfonic acid (II);

3) oxidizing the 2,7-dihydroxy-1-aminonaphthalene-4-sulfonic acid to 7-hydroxy-1,2-naphthoquinone-4-sulfonic acid (III) and precipitating this acid as a first salt; and

4) converting this salt with an arylsulfonic acid hydrazide to a salt of 7-hydroxy-1,2-naphthoquinone-2-diazide-4-sulfonic acid (IV), isolating this salt, and optionally converting this salt to the corresponding acid.

5,192,641

METHOD OF THERMAL WAX TRANSFER AS A MASK FOR DIGITAL COLOR PROOFING

Sonya Y. Shaw, Carrollton, Tex., and Douglas A. Seeley, High Bridge, N.J., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Dec. 19, 1990, Ser. No. 630,091
Int. Cl.[5] G03B 33/04; G03F 3/06
U.S. Cl. 430—200 5 Claims

1. A process for producing a color image on color proofing film which comprises:

(i) providing digital data representative of the shape and color of an original image;

(ii) inputing said digital data into a computer;

(iii) providing a color printer which is in communication with and controlled by said computer;

(iv) providing said printer with a precoated photosensitive color proofing film, a thermal wax and means for transferring said wax to said color proofing film;

(v) melting said thermal wax, in response to said digital data, in a manner which provides a pattern corresponding to the shape of said original image, said pattern providing a temporary thermal wax optical mask;

(vi) exposing the photosensitive layer of said color proofing film, through said wax mask, to actinic radiation, whereby the wax on said color proofing film absorbs said actinic radiation and a photoreaction occurs in the non-wax, exposed areas of said photosensitive layer of said color proofing film; and

(vii) developing said color proofing film to provide a color image corresponding to said original image.

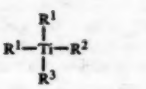
5,192,642

OXYGEN-CONTAINING TITANOCENES, AND THE USE THEREOF

Eginhard Steiner, Füllinsdorf; Harry Beyeler, Basel; Martin Riediker, Rorbas; Vincent Desobry, Marly; Kurt Dietliker, Fribourg, and Rinaldo Hüsler, Wünnewil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

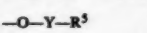
Filed May 23, 1990, Ser. No. 527,988
Claims priority, application Switzerland, Jun. 1, 1989, 2074/89
Int. Cl.[5] G03F 7/029; C07F 17/00
U.S. Cl. 430—281 16 Claims

1. A titanocene of the formula I



(I)

in which both the R^1 radicals, independently of another, are cyclopentadienyl$^{\ominus}$, indenyl$^{\ominus}$ or 4,5,6,7-tetrahydroindenyl$^{\ominus}$, each of which is unsubstituted, monosubstituted or polysubstituted by C_1–C_{18}alkyl, C_1–C_{18}alkoxy, C_2–C_{18}alkenyl, C_5–C_8-cycloalkyl, C_6–C_{10}aryl, C_7–C_{16}aralkyl, $—Si(R^4)_3$, $—Ge(R^4)_3$, cyano or halogen, and R^4 is C_1–C_{12}alkyl, C_5–C_8cycloalkyl, C_6–C_{10}aryl or C_7–C_{16}aralkyl, R^2 is a 6-membered carbocyclic or 5- or 6-membered heterocyclic aromatic ring which is substituted by fluorine atoms at least in the two ortho-positions to the titanium-carbon bond, and in which the aromatic ring may contain 1 or 2 fluoro atoms as further substituents, and R^3, independently, is as defined for R^2, R^2 and R^3 in the titanocenes being substituted by a radical of the formula II



(II)

in which Y is a —CO—, —CS—, —CO—O—, $—SO_2—$, $—Si(R^4)_2—$, —CO—NR^6—, —CS—NR^6— or $—SO_2—NR^6$— group, R^5 is linear or branched C_1–C_{20}alkyl, C_2–C_2-oalkenyl, C_3–C_8cycloalkyl, C_6–C_{15}-cycloalkylalkyl or -alkylcycloalkyl, C_7–C_{16}-alkylcycloalkylalkyl, C_6–C_{20}cycloalkenylalkyl, C_7–C_{20}bicycloalkyl, C_6–C_{14}aryl, C_7–C_{12}aralkyl, C_7–C_{20}alkylaryl or C_8–C_{20}alkylaralkyl, these radicals being unsubstituted or substituted by C_1–C_{18}alkoxy, C_1–C_{12}alkylthio, C_1–C_{18}alkylsulfonyl, C_6–C_{10}arylsulfonyl, C_7–C_{20}alkylarylsulfonyl, —COOH, —CN, —$COOR^4$, —CO—(C_1–C_2-oalkyl) or halogen, R^6 is hydrogen or has one of the meanings mentioned for R^5, or R^5 and R^6 together are C_3–C_7alkylene, which may be interrupted by —O—, —S— or —$N(R^7)$—, in which R^7 is hydrogen, C_1–C_{12}alkyl, C_3–C_{12}alkenyl, C_7–C_{12}-aralkyl or C_2–C_{20}alkanoyl.

12. A radiation-polymerizable composition containing (a) at least one non-volatile, monomeric, oligomeric or polymeric compound containing at least one polymerizable ethylenically unsaturated double bond, and (b) at least one titanocene of the formula I according to claim 1 as photoinitiator.

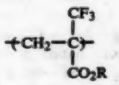
5,192,643

PATTERN-FORMING METHOD AND RADIATION RESIST FOR USE WHEN WORKING THIS PATTERN-FORMING METHOD

Akiko Kotachi, Yokohama, and Satoshi Takechi, Machida, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 22, 1991, Ser. No. 643,960
Claims priority, application Japan, Jan. 24, 1990, 2-012640
Int. Cl.[5] G03C 5/00; G03F 7/075
U.S. Cl. 430—296 6 Claims

1. A pattern-forming method, which comprises irradiating a positive resist composed mainly of a polymer or copolymer comprising structural units represented by the following formula (1):



(1)

wherein R represents a hydrocarbon group containing a substituent with at least one Si atom,

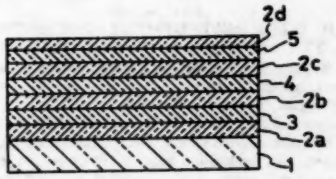
patternwise with an energy beam, and developing the irradiated resist pattern.

5,192,644

OPTICAL MEMORY DEVICE

Kenji Ohta, and Kazuo Van, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 29, 1990, Ser. No. 604,581
Claims priority, application Japan, Oct. 30, 1989, 1-284602
Int. Cl.[5] G11B 7/24
U.S. Cl. 430—338 12 Claims



1. An optical memory device which comprises a substrate and a plurality of optical memory layers made of an organic photochromic material and formed over the substrate, the plurality of optical memory layers being laminated to each other through a heat conductive transparent film.

5,192,645

THERMAL IMAGING METHOD

Roger A. Boggs, Wayland, Mass.; Alan L. Borror, Cape Elizabeth, Me.; Patrick R. Conlon, Wakefield, Mass.; Richard L. Cournoyer, San Jose, Calif.; Ernest W. Ellis, Leverett, and David P. Waller, Lexington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 277,014, Nov. 28, 1988, abandoned, which is a continuation-in-part of Ser. No. 221,032, Jul. 18, 1988, abandoned. This application Jul. 12, 1991, Ser. No. 729,420

Int. Cl.[5] G03C 1/72

U.S. Cl. 430—338 20 Claims

1. A heat-sensitive recording element which comprises a support carrying at least one layer of a colorless precursor of a preformed image dye substituted with (a) at least one thermally removable protecting group that undergoes fragmentation from said precursor upon heating and (b) at least one leaving group that is irreversibly eliminated from said precursor upon heating, provided that neither said protecting group nor said leaving group is hydrogen, said protecting and leaving groups maintaining said precursor in its colorless form until heat is applied to effect removal of said protecting and leaving groups whereby said colorless precursor is converted to an image dye.

5,192,646

PHOTOGRAPHIC ELEMENTS HAVING SULFOXIDE COUPLER SOLVENTS AND ADDENDA TO REDUCE SENSITIZING DYE STAIN

Paul B. Merkel, Rochester; Edward Schofield, and Tienteh Chen, both of Penfield, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 9, 1991, Ser. No. 804,787

Int. Cl.[5] G03C 1/38

U.S. Cl. 430—377 31 Claims

1. A method of forming color in a silver halide photographic element wherein the silver halide is sensitized with a dye, which comprises reacting an oxidized developing agent with a phenolic or naphtholic cyan dye-forming coupler in a sulfoxide coupler solvent having the formula:

wherein R_1 and R_2 are individually selected from the group consisting of straight and branched chain alkyl groups, alkylene groups and alkenyl groups, any of which may be substituted with one or more substituents selected from the group consisting of alkoxy, aryloxy, aryl, alkoxycarbonyl, aryloxycarbonyl, acyloxy, carbonamido and carbamoyl groups, and halogen atoms; a phenyl group; and a phenyl group having at least one substituent selected from alkyl, alkoxy, aryloxy, aryl, alkoxycarbonyl, aryloxycarbonyl, acyloxy, carbonamido and carbamoyl groups and halogen atoms; and wherein R_1 and R_2 combined have at least 12 carbon atoms.

5,192,647

METHOD FOR DEVELOPMENT PROCESSING OF SILVER HALIDE PHOTOGRAPHIC MATERIAL

Tetsuro Kojima; Shoji Ishiguro; Hisashi Okada, and Morio Yagihara, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

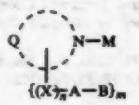
Continuation of Ser. No. 339,443, Apr. 17, 1989, abandoned, which is a continuation of Ser. No. 112,183, Oct. 26, 1987, abandoned. This application Mar. 7, 1991, Ser. No. 668,688

Claims priority, application Japan, Oct. 24, 1986, 61-252846

Int. Cl.[5] G03C 5/26

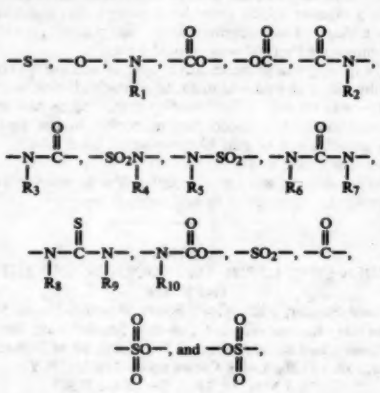
U.S. Cl. 430—448 13 Claims

1. A method for development processing of a silver halide photographic material, comprising the step of developing a light-sensitive silver halide photographic material comprising a support having thereon at least one surface latent image type silver halide emulsion layer in the presence of a non-cleaving compound represented by formula (I):



(I)

wherein Q represents an atomic group necessary for forming a 5- or 6-membered heterocyclic ring which may be fused with an aromatic carboxylic ring, or an aromatic heterocyclic ring, provided that Q is selected from the group consisting of an indazole ring, a benzotriazole ring, an imidazole ring, a tetrazole ring, a tetraazaindene ring, a triazaindene ring, a pentaazaindene ring, a diazaindene ring, a pyrazole ring, and an indole ring; X represents a divalent linking group selected from the group consisting of:



wherein R_1, R_2, R_3, R_4, R_5, R_6, R_7, R_8, R_9, and R_{10}, which may be the same or different, each represents a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted alkenyl group, or a substituted or unsubstituted aralkyl group, and X is linked to Q via a straight or branched chain alkylene group; A represents a linking group containing at least one group selected from a straight or branched chain alkylene group having at least two carbon atoms, a straight or branched chain alkenylene group, a straight or branched chain aralkylene group and an arylene group; B represents a substituted or unsubstituted amino group or a nitrogen-containing heterocyclic ring selected from the group consisting of a morpholino group, a piperidino group, a pyrrolidino group, a pyridyl group, and an imidazolyl group; M represents a hydrogen atom, an alkali metal atom or an ammonium group; m is 1 or 2; and n is 1.

5,192,648

PHOTOGRAPHIC FILM AND CARTRIDGE

William L. Burnham, Leroy, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 18, 1992, Ser. No. 838,119

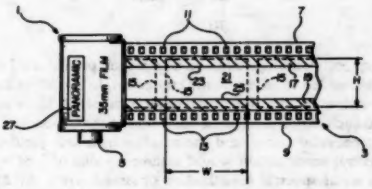
Int. Cl.[5] G03C 3/00

U.S. Cl. 430—496 6 Claims

1. A photographic film comprising an elongated light-sensitive strip having a longitudinal series of similar size rectangular exposure areas whose proportion of the width to the height is less than 2:1, is characterized in that:

each exposure area is pre-exposed along a topmost portion and/or a bottom-most portion to limit the useable size of

each exposure area during picture-taking to one whose proportion of the width to the height is at least 2:1,



whereby said usable size of each exposure area provides a panorama-like image format.

5,192,649

COLOR DIFFUSION TRANSFER LIGHT-SENSITIVE MATERIAL

Katsumi Hirano; Munehisa Fujita, and Katsuhisa Ohzeki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 4, 1991, Ser. No. 787,594
Claims priority, application Japan, Nov. 5, 1990, 2-299262
Int. Cl.[5] G03C *5/54*
U.S. Cl. 430—497 **4 Claims**

1. A color diffusion transfer light-sensitive material comprising a support having thereon light-sensitive silver halide emulsions and an electron donor in combination with reducible dye providing compounds each of which releases a diffusible dye when reduced and, further, a silver halide emulsion having substantially no light sensitivity in addition to the light-sensitive silver halide emulsions.

4. A color diffusion transfer unit comprising a color diffusion transfer light-sensitive material as in claim 1 and an alkaline processing solution containing an electron transfer agent in a rupturable container.

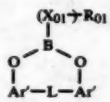
5,192,650

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL CONTAINING A COLOR IMAGE STABILIZER

Nobuo Seto, and Masakazu Morigaki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jan. 23, 1991, Ser. No. 644,839
Claims priority, application Japan, Jan. 25, 1990, 2-15792; Jul. 17, 1990, 2-188242
Int. Cl.[5] G03C *1/38, 7/32, 7/388, 1/34*
U.S. Cl. 430—546 **14 Claims**

1. A silver halide color photographic material comprising a support having a photographic layer thereto, said layer containing at least one compound represented by formula (I-2):



(I-2)

wherein Ar' represents a divalent aromatic group; L represents a mere bond or a divalent organic group; and R_{01} represents a hydrogen atom, an aliphatic group, an aromatic group or a heterocyclic group; X_{01} represents a mere bond, —O—, —S— or

and R_{04} has the same meaning as R_{01}.

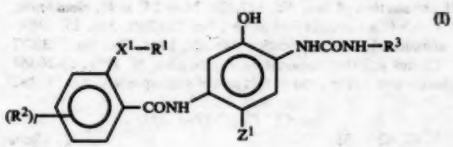
5,192,651

SILVER HALIDE COLOR PHOTOGRAPHIC PHOTOSENSITIVE MATERIALS CONTAINING AT LEAST TWO TYPES OF CYAN DYE FORMING COUPLERS

Jiro Tsukahara, and Hidetoshi Kobayashi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co. Ltd., Kanagawa, Japan

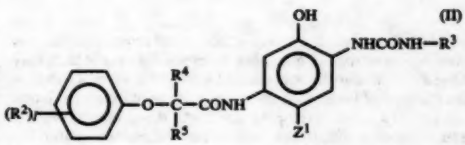
Filed Dec. 19, 1990, Ser. No. 630,257
Claims priority, application Japan, Dec. 20, 1989, 1-330766
Int. Cl.[5] G03C *7/34*
U.S. Cl. 430—549 **18 Claims**

1. A photographic photosensitive material comprising a support having thereon at least one silver halide emulsion layer, said photosensitive material containing at least one cyan dye forming coupler represented by formula (I):



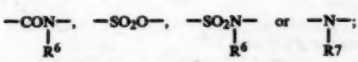
(I)

and at least one cyan dye forming coupler represented by formula (II):



(II)

in proportions, respectively, from 20 to 99 wt % and from 1 to 80 wt %, based on the total amount of both couplers of formulae (I) and (II), wherein R^1 represents a substituted or unsubstituted alkyl group, alkenyl group, alkynyl group, cycloalkyl group or aryl group; X^1 represents a single bond, —O—, —S—, —SO—, —SO_2—, —COO—,



R^2 represent a group which can be substituted on a benzene ring; l represents an integer from 0 to 4; R3 is selected from the group consisting of 4-cyanophenyl, 4-cyano-3-halogenophenyl, 3-cyano-4-halogenophenyl, 4-alkylsulfonylphenyl, 4-alkylsulfonyl-3-halogenophenyl, 4-alkylsulfonyl-3-alkoxyphe-

nyl, 3-alkoxy-4-alkylsulfonyl-phenyl, 3,4-dihalogenophenyl, 4-halogenophenyl, 3,4,5-trihalogenophenyl, 3,4-dicyanophenyl, 3-cyano-4,5-dihalogenophenyl, 4-trifluoromethylphenyl and 3-sulfonamidophenyl; R^4 and R^5 each independently represent a hydrogen atom, an alkyl group, an alkenyl group, an alkynyl group, a cycloalkyl group, an acyl group, an alkoxycarbonyl group or an aryl group; Z^1 represents a hydrogen atom or a coupling-off group; R^6 represents a hydrogen atom, an acyl group or a group as defined for R^1; and R^7 represents a hydrogen atom or a group as defined for R^1.

5,192,652

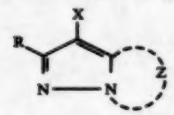
SILVER HALIDE LIGHT-SENSITIVE PHOTOGRAPHIC MATERIAL

Makoto Kajiwara, and Masanobu Miyoshi, both of Odawara, Japan, assignors to Konica Corporation, Kanagawa, Japan

Continuation of Ser. No. 527,702, May 24, 1990, abandoned, which is a continuation of Ser. No. 299,369, Jan. 23, 1989, abandoned. This application Jun. 27, 1991, Ser. No. 723,677
Claims priority, application Japan, Jan. 30, 1988, 63-20364
The portion of the term of this patent subsequent to Apr. 3, 2007, has been disclaimed.
Int. Cl.[5] G03C *1/34, 7/32*
U.S. Cl. 430—551 **21 Claims**

21. The light-sensitive silver halide photographic material comprising a support and provided thereon at least one silver halide emulsion layer containing a magenta dye-forming coupler represented by formula M-I;

M-I



wherein Z represents a group of non-metal atoms necessary to complete a nitrogen-containing heterocyclic ring which may have a substituent; X represents a hydrogen atom or a substituent capable of being split off upon reaction with an oxidation product of a color developing agent; and R represents a hydrogen atom or a substituent, wherein an elementary sulfur has been added to said silver halide emulsion at an arbitrary timing before formation of said silver halide emulsion layer on said support.

5,192,653

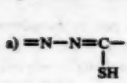
METHOD FOR SPECTRALLY SENSITIZING SILVER HALIDE PHOTOGRAPHIC EMULSIONS

Tadaaki Tani, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 468,512, Jan. 23, 1990, abandoned. This application Feb. 26, 1992, Ser. No. 840,588
Claims priority, application Japan, Jan. 23, 1989, 1-13377
Int. Cl.[5] G03C *1/015, 1/12*
U.S. Cl. 430—569 **11 Claims**

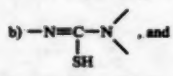
1. A method for spectrally sensitizing a silver halide emulsion comprising the steps of:

adding a heterocyclic compound containing a mercapto group to an emulsion in an amount sufficient to increase the ϕ_r, said heterocyclic compound containing one of the following as a partial structure:

a) 

and

-continued

b) 

subsequently adding a cyanine dye, which provides a J-band when added to silver halide emulsions, to the silver halide emulsion under a ripening temperature of 60° C. or above and such other conditions such that in the absence of said heterocyclic compound the relative quantum yield ϕ_r of spectral sensitization would assume a value of $\frac{1}{4}$ or less of the ϕ_r of spectral sensitization obtained when the dye is added to the emulsion under ripening conditions of 40° C. and 20 minutes from the time of the addition of the dye to the emulsion until the time of coating the emulsion.

5,192,654

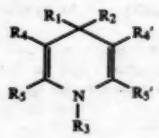
SILVER HALIDE PHOTOGRAPHIC EMULSIONS

Takanori Hioki, and Haruo Takei, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 507,539, Apr. 11, 1990, abandoned. This application Dec. 4, 1991, Ser. No. 801,628
Claims priority, application Japan, Apr. 11, 1989, 1-91241
Int. Cl.[5] G03C *1/28*
U.S. Cl. 430—576 **4 Claims**

1. A silver halide photographic emulsion including a spectrally sensitizing dye and at least one compound represented by general formula (I) as shown below:

General Formula (I)



wherein R_1 and R_2 each represents a hydrogen atom, an ethyl group or a phenyl group;

R_3 represents a hydrogen atom, a methyl group or a phenyl group;

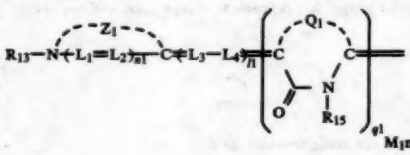
R_4 and R_4' each represents an alkoxycarbonyl group, a cyano group, an acetyl group or a carbamoyl group; and

R_5 and R_5' each represents a methyl group or a phenyl group, wherein the methyl group or phenyl group can be substituted with an adsorbable group represented by $(L_{16})_r$-Het,

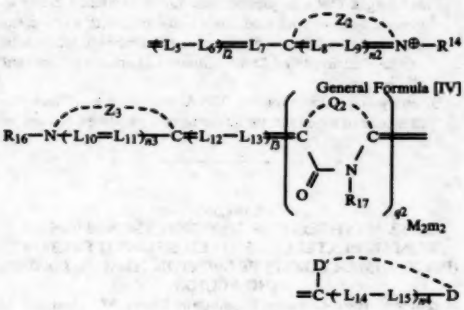
wherein L_{16} represents a divalent linking group comprising an atom or group of atoms which includes at least one carbon atom, nitrogen atom or oxygen atom; Het represents a five-, six- or seven-membered heterocyclic ring which contains at least one nitrogen atom and which may contain hetero atoms other than nitrogen; and r is 0, 1 or 2.

2. The silver halide photographic emulsion of claim 1 wherein the spectrally sensitizing dye is a compound represented by general formula (III) or general formula (IV) as shown below:

General Formula (III)



-continued



General Formula [IV]

wherein R_{13}, R_{14} and R_{16} represent alkyl groups; R_{15} and R_{17} represent alkyl groups, aryl groups or heterocyclic groups;

Z_1, Z_2 and Z_3 represent groups of atoms which are required to form five or six membered nitrogen containing heterocyclic rings;

Q_1 and Q_2 represent groups of atoms which are required to form five or six membered nitrogen containing heterocyclic rings;

D and D' represent groups of atoms which are required to form cyclic or non-cyclic acidic nuclei;

L_1, L_2, L_3, L_4, L_5, L_6, L_7, L_8, L_9, L_{10}, L_{11}, L_{12}, L_{13}, L_{14} and L_{15} represent methine groups;

n_1, n_2, n_3 and n_4 are 0 or 1;

l_1, l_2 and l_3 represent 0, 1, 2 or 3;

q_1 and q_2 represent 0 or 1;

M_1 and M_2 represent charge balancing counter ions;

and m_1 and m_2 are the numbers of value at least zero which are required to balance the charge.

5,192,655

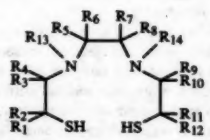
SILVER HALIDE ELEMENTS WITH IMPROVED SPEED AND LOW FOG

Dominic M. Chan, Wilmington, Del., and Raymond J. LeStrange, Hendersonville, N.C., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 5, 1991, Ser. No. 726,331
Int. Cl.[5] G03C *1/09*
U.S. Cl. 430—600 **8 Claims**

1. In a photosensitive element having at least one gelatino silver halide emulsion coated on a support wherein the improvement comprises said emulsion containing a sensitizing amount of a cysteine derivative selected from the group consisting of:

(a)



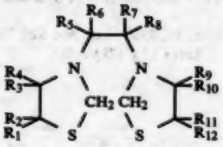
or the HCI or oxalic acid salt thereof wherein

each of R_1–R_{12} individually is selected from the group consisting of H, alkyl of 1–10 carbon atoms and —COOR;

R is H, alkyl of 1–10 carbon atoms, unsubstituted phenyl or phenyl substituted with up to 5 ring substituents each selected from alkyl of 1–4 carbon atoms;

each of R_{13} and R_{14} individually is selected from the group consisting of H and alkyl of 1–10 carbon atoms containing zero of 1 heteroatoms selected from N, O or S and

(b)



or the HCI or oxalic acid salt thereof wherein:

each of R_1–R_{12} individually is selected from the group consisting of H, alkyl of 1–10 carbon atoms and —COOR;

R is H, alkyl of 1–10 carbon atoms, unsubstituted phenyl or phenyl substituted with up to 5 ring substituents each selected from alkyl of 1–4 carbon atoms.

5,192,656

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Toshihiro Nishikawa; Shinji Ueda, and Hideo Usui, all of Minami-Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Filed Apr. 13, 1988, Ser. No. 181,096
Claims priority, application Japan, Apr. 15, 1987, 62-92371
The portion of the term of this patent subsequent to Mar. 14, 2006, has been disclaimed.
Int. Cl.[5] G03C *1/005*
U.S. Cl. 430—627 **8 Claims**

1. A silver halide color photographic light-sensitive element comprising at least one silver halide emulsion layer applied onto a substrate, at least one of the layers being formed from a silver halide emulsion containing not less than 7 mole % of silver iodide, the total amount of iodine included in the silver halide emulsion layers being not less than 4×10^3 moles/m^2 expressed as AgI and an anion exchange polymer represented by the following general formula (I):

(I)

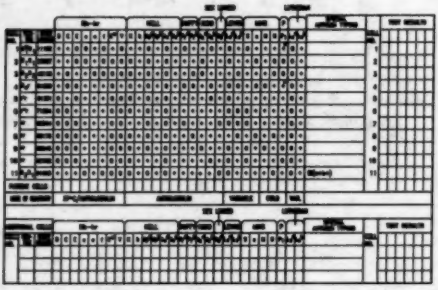
wherein A represents an ethylenically unsaturated monomer unit; R_1 represents a hydrogen atom, or a lower alkyl group having 1 to about 6 carbon atoms; L represents a bivalent group having 1 to about 12 carbon atoms; R_2 to R_4 may be the same or different and each represents an alkyl group having 1 to about 20 carbon atoms, an aralkyl group having 7 to about 20 carbon atoms or a hydrogen atom with the proviso that R_2 to R_4 may form a ring together with Q; Q represents a nitrogen or phosphorus atom; X represents an anion other than an iodide ion; x is 0 to about 90 mole % and y is about 10 to 100 mole %, which anion exchange polymer is added in an amount of 0.3 to 100 cationic site units per mole of total iodine in the element to at least one of the non-light-sensitive and light-sensitive layers wherein the non-light-sensitive layer is applied to the side of the substrate the same or opposite to that having the light sensitive layers.

5,192,657

STABILIZED PROTEOLYTIC SOLUTION AND REAGENT KIT

Janice Jakway, Bridgewater, and Dennis Mochnal, Clinton, both of N.J., assignors to Ortho Diagnostic Systems, Inc., Raritan, N.J.

Filed Dec. 18, 1990, Ser. No. 629,307
Int. Cl.[5] C12Q *1/00*
U.S. Cl. 435—4 20 Claims



1. A stabilized proteolytic solution comprising ficin, L-cysteine, and dithiothreitol (DTT) in an acidic aqueous medium.

5,192,658

COMPOSITIONS AND PROTOCOLS APPLICABLE TO GENETIC ANALYSIS

Zvi G. Loewy, Bronx, N.Y.; Nancy Y. Ip, Stamford, Conn.; Howard J. Baum, Stony Point, N.Y.; Susan L. Leary, Hopewell Junction, N.Y., and Ingrid L. M. van de Stadt, Ossining, N.Y., assignors to Lifecodes Corporation, Stamford, Conn.

Filed Mar. 30, 1989, Ser. No. 331,414
Int. Cl.[5] C12Q *1/68, 1/00;* C07H *15/12*
U.S. Cl. 435—6 11 Claims

1. A polynucleotide which hybridizes to the human genetic locus D18S27 selected from the group consisting of:

(a) the human DNA insert in plasmid pAC387;

(b) the human DNA insert in plasmid pAC388;

(c) the human DNA insert in plasmid pAC404; and

(d) the human DNA insert in plasmid pAC405.

5,192,659

INTRON SEQUENCE ANALYSIS METHOD FOR DETECTION OF ADJACENT AND REMOTE LOCUS ALLELES AS HAPLOTYPES

Malcolm J. Simons, Fryerstown, Australia, assignor to GeneType AG, Zug, Switzerland

Continuation-in-part of Ser. No. 463,863, Jan. 16, 1990, abandoned, which is a continuation-in-part of Ser. No. 405,499, Sep. 11, 1989, abandoned, which is a continuation-in-part of Ser. No. 398,217, Aug. 25, 1989, abandoned. This application Jul. 11, 1990, Ser. No. 551,239
Int. Cl.[5] C12Q *1/68;* C12P *19/34*
U.S. Cl. 435—6 11 Claims

7. A method for detection of at least one allele of an HLA locus comprising:

A. amplifying genomic DNA with a primer pair that spans a non-coding region sequence selected from the group consisting of untranslated sequences between exons, 5' and 3' untranslated regions associated with a genetic locus, and spacing sequences between genetic loci, said primer pair defining a DNA sequence, said DNA sequence being in genetic linkage with said allele and containing a sufficient number of said non-coding region sequence nucleotides to produce an amplified DNA sequence characteristic of said allele; and

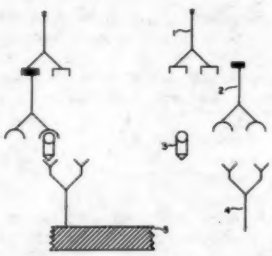
B. analyzing said amplified DNA sequence to detect the presence of a genetic variation in said amplified sequence.

5,192,660

ELISA METHODS FOR THE DETERMINATION OF HUMAN PLATELET DERIVED GROWTH FACTOR (PDGF) DIMER FORMS PRESENT IN HUMAN TISSUES AND FLUIDS

Berenice Y. Reed-Gitomer, Washington Grove, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Apr. 24, 1989, Ser. No. 341,949
Int. Cl.[5] G01N *33/543*
U.S. Cl. 435—7.21 10 Claims



1. An enzyme linked immunosorbent assay for the quantitative determination of human platelet derived growth factor homodimer BB and heterodimer AB present in human bodily fluids, tissue extracts, or a fluid contacting human cells in culture, which comprises the steps of:

(I) providing an anti-human platelet derived growth factor homodimer BB polyclonal antibody coated surface;

(II) contacting a test sample of a patient's bodily fluid, tissue extract or a fluid contacting said patient's cells in culture, with said coated surface to bind human platelet derived growth factor homodimer BB or heterodimer AB present in said patient's bodily fluids, tissue extracts, or a fluid contacting said patient's cells in culture, to said coated surface;

(III) contacting, after step II, a second anti-platelet derived growth factor polyclonal antibody with said coated surface, to bind said second antibody to said coated surface when human platelet derived growth factor homodimer BB or heterodimer AB has previously bound to said coated surface in step II;

(IV) contacting after step III, an enzyme labelled antibody, which is reacted with said second antibody, with said coated surface to bind said enzyme labelled antibody to said coated surface when said second antibody has previously bound to said coated surface in step III;

(V) contacting after step IV, said coated surface with a chemical enzyme label indicator which indicates the presence of said enzyme labeled antibody bound to said coated surface; and

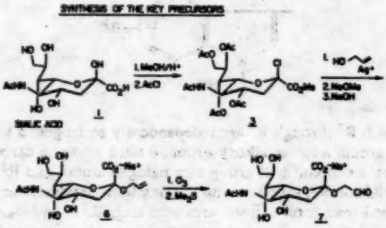
(VI) quantitatively determining the amount of said human platelet derived growth factor homodimer BB and heterodimer AB which are present in the test sample based on the amount of the enzyme labelled antibody bound to the coated surface.

5,192,661

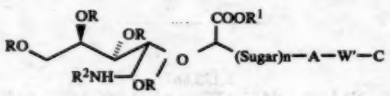
MULTICOMPONENT KIT CONTAINING AN ANTIBODY TO A SYNTHETIC ANTIGEN OF SIALIC ACID

Rene Roy, Gatineau, and Craig A. Laferriere, Mississauga, both of Canada, assignors to University of Ottawa, Ottawa, Canada

Division of Ser. No. 81,431, Aug. 4, 1987, Pat. No. 5,034,516.
This application May 31, 1991, Ser. No. 708,671
Int. Cl.[5] C12Q *1/00*; G01N *33/53*; C07K *3/00, 15/00*
U.S. Cl. 435—7.23 2 Claims



1. A multicomponent kit for detecting a sialic acid-containing antigen in a sample which kit comprises at least first and second components are in separate containers, said first component comprising an antibody which selectively binds to a compound having a terminal sialic acid moiety, said compound having the formula



wherein each R separately represents hydrogen or acetyl,

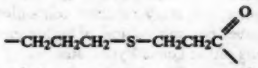
R^1 represents hydrogen, methyl, sodium or potassium;

R^2 represents hydrogen, acetyl or hydroxyacetyl; each (sugar) represents a sugar moiety selected from the group consisting of galactose, glucose and lactose;

n is 0, 1 or 2,

A represents a heteroatom selected from the group consisting of oxygen, sulphur, and nitrogen and stands for or replaces an oxygen atom at the reducing end of the sugar moiety or sialic acid moiety; and

W' represents —$CH_2CH_2CH_2$—S—$CH_2CH_2NHCOCH_2C$-H_2—, —CH_2—CH_2—, —CH_2CH_2C-H_2—S—CH_2CH_2NH—,



or —$CH_2CH_2CH_2$—S—$CH_2CH_2NHCOCH_2$—; and

C constitutes a carrier,

said second component comprising detection means for detecting a reaction between said antibody and said compound.

5,192,662

ANTI-GANGLIOSIDE GD_{1A} MONOCLONAL ANTIBODY MZ, MZ-PRODUCING CELLS AND MZ-CONTAINING REAGENT

Shinso Shimada; Daiji Iwata, both of Mobara, and Wakao Sato, Chiba, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Sep. 7, 1988, Ser. No. 241,291
Claims priority, application Japan, Sep. 7, 1987, 62-221862
Int. Cl.[5] G01N *33/574, 33/532*; C07K *15/28*
U.S. Cl. 435—7.23 10 Claims

5. A method of screening for cancer, systemic lupus erythematosus (SLE) and pathological conditions of the nervous system resulting from an organic injury, which comprises the steps of:

(a) binding ganglioside $GD_{1\alpha}$ present in a mixture of gangliosides in the serum of a sample of mammalian blood from an individual being diagnosed for cancer, SLE or a pathological condition of the nervous systems to an anti-ganglioside $GD_{1\alpha}$ monoclonal antibody;

(b) separating the thus-produced $GD_{1\alpha}$-antibody complex from the other gangliosides; and

(c) detecting and determining the relative proportion of $GD_{1\alpha}$ present in the sample of blood compared to that present in a corresponding sample of blood from a healthy human being.

5,192,663

ARTICLE HAVING AN ORGANIC DYE AND A MONOLAYER OF DRIED MAMMALIAN CELLS AND A METHOD FOR UTILIZING THE ARTICLE

Lyle T. Sinor, and Ralph A. Eatz, both of Roswell, Ga., assignors to Immucor, Inc., Norcross, Ga.

Division of Ser. No. 267,014, Nov. 4, 1988, Pat. No. 5,030,560.
This application May 21, 1991, Ser. No. 702,888
The portion of the term of this patent subsequent to Oct. 16, 2007, has been disclaimed.
Int. Cl.[5] G01N *33/543*
U.S. Cl. 435—7.25 18 Claims

1. An article for performing solid-phase immunological assays comprising:

a solid phase support;

a coating of an organic dye having a net-positive charge and a hydrophobic aromatic ring structure adsorbed to said support; and

a dried monolayer comprising a sugar, a salt, and mammalian cells said mammalian cells antigenicity having been substantially preserved, immobilized to said organic dye.

5,192,664

PARATHYROID HYPERTENSIVE FACTOR, ANTIBODIES AND USES THEREOF

Peter K. T. Pang, 52225 Range Road 232, 205 Carriage Lane, Sherwood Park, Alberta, Canada T8A 245 ; Richard Z. Lewanczuk, Edmonton, Canada; Christine G. Benishin, Ardossen, Canada, and Toyoji Kaneko, Kanagawa, Japan, assignors to Peter K. T. Pang, Alberta, Canada

PCT No. PCT/US90/01577, § 371 Date Nov. 21, 1990, § 102(e) Date Nov. 21, 1990, PCT Pub. No. WO90/11074, PCT Pub. Date Oct. 4, 1990
Continuation-in-part of Ser. No. 327,450, Mar. 22, 1989, abandoned, and a continuation-in-part of Ser. No. 460,482, Jan. 3, 1990. This PCT application Nov. 21, 1990, Ser. No. 603,745
Int. Cl.[5] C12Q *1/00*; C07K *15/00*
U.S. Cl. 435—79 15 Claims

1. Substantially pure parathyroid hypertensive factor.

2. Substantially pure parathyroid hypertensive factor according to claim 1 having a molecular weight of about approximately 3,000 to 4,000 daltons.

4. A method for the preparation of substantially pure parathyroid hypertensive factor comprising:

(a) isolating blood plasma from a hypertensive mammal;

(b) removing components having a molecular weight less than 1,000 daltons from said plasma by dialysis against distilled water to obtain a dialysate;

(c) separating plasma components having a molecular weight lower than 5000 daltons from said dialysate by ultrafiltration to obtain a filtrate;

(d) concentrating the filtrate by lyophilization to obtain a concentrate;

(e) fractionating said concentrate on a molecular sieve column and eluting to obtain a plurality of fractions and identifying the fraction having hypertensive factor activity;

(f) concentrating said fraction having parathyroid hypertensive factor activity by lyophilization; and

(g) purifying the fraction obtained in step (f) by reverse phase HPLC.

14. A kit for the detection of parathyroid hypertensive factor in a mammal, comprising, in a single package:

a) an antibody to parathyroid hypertensive factor bound to a solid phase;

b) a secondary antibody to anti-parathyroid hypertensive factor antibody labeled with an enzyme;

c) a substrate for said enzyme label on said secondary antibody; and

d) standard solutions of parathyroid hypertensive factor.

5,192,665

METHOD OF OPHTHALMIC TESTING

Eeva-Marjatta Salonen, Espoo, Finland, assignor to Labsystems, Oy, Helsinki, Finland

Division of Ser. No. 838,339, Mar. 11, 1986, Pat. No. 4,849,406. This application Apr. 11, 1989, Ser. No. 336,249

Int. Cl.[5] C12Q *1/34*

U.S. Cl. 435—18 **4 Claims**

1. A method of determining the presence of epithelial lesions of an eye of a patient which comprises, taking a sample of tears from an epithelial region of the eye suspected to have said lesions, and testing said tears for the presence of a plasmin.

3. A method of detecting allergic sensitivity of a patient to an allergen which comprises administering said allergen to an eye and testing tears of said patient for proteolytic activity.

5,192,666

α-AMYLASE ASSAY USING MODIFIED OLIGOSACCHARIDE AND PROCESS FOR PRODUCING SAID MODIFIED OLIGOSACCHARIDE

Tokuji Ikenaka, Sakai; Kaoru Omichi, Toyonaka; Shinji Satomura, Osaka, and Yuko Nagamine, Toyonaka, all of Japan, assignors to Wako Pure Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 72,208, Jul. 10, 1987, abandoned. This application Dec. 29, 1989, Ser. No. 465,660

Claims priority, application Japan, Jul. 11, 1986, 61-163054; Jan. 9, 1987, 62-2730; Jan. 26, 1987, 62-15776

The portion of the term of this patent subsequent to Nov. 11, 2003, has been disclaimed.

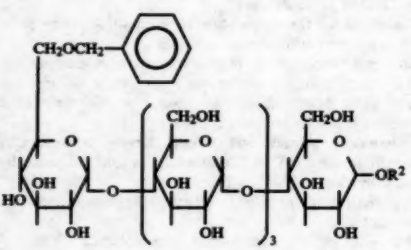
Int. Cl.[5] C12Q *1/40, 1/34, 1/54, 1/00*; C07H *1/00, 3/00, 15/00, 17/00, 17/02*; C08B *37/00, 30/18*; C07G *3/00*

U.S. Cl. 435—22 **4 Claims**

1. A process for determining the activity of α-amylase in a sample which comprises

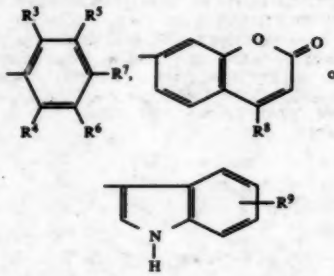
using as a substrate for α-amylase a modified oligosaccharide of the formula:

(I)



wherein R^2 is selected from the group consisting of the formula (III):

(III)



in which R^3 through R^6 are independently hydrogen, a lower alkyl group, a lower alkoxy group, a nitro group, a carboxyl groups, a sulfonic acid group or a halogen atoms, and R^3 and R^5 or R^4 and R^6, together with the ring toms to which they are attached may form a fused aromatic ring; R^7 is hydrogen, a lower alkoxy group, a halogen atom or a nitro group; R^8 is hydrogen, a methyl group or a trifluoromethyl group; R^9 is a hydrogen or a halogen atom,

contacting said sample with said substrate in the presence of at least one exo-enzyme, and

measuring an optically measurable change as a measure of α-amlase activity in said sample.

5,192,667

METHOD FOR EVALUATING ANTI-FOULING PAINTS

Arthur V. Stiffey, Slidell, La., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 15, 1989, Ser. No. 394,400

Int. Cl.[5] C12Q *1/18*

U.S. Cl. 435—32 **14 Claims**

1. A method of assaying marine paints for their ability to inhibit attachment and growth of marine fouling organisms, which comprises the steps of:

applying a preselected volume of a marine paint solution to a bottom surface in a first test container;

drying the paint solution to form a dried paint coating on the first test container bottom surface;

adding a preselected volume of an assay medium to the first test container, the assay medium containing a predetermined number per unit volume of bioluminescent dinoflagellate cells of the genus Pyrocystis;

after a preselected settling time, agitating the dinoflagellate cells in the first test container for a preselected agitation time while simultaneously measuring the light output of the dinoflagellate cells in the first test container.

5,192,668

SYNTHESIS OF PROTEASE INHIBITOR

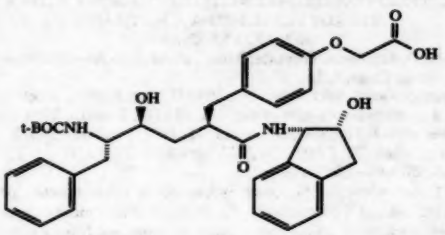
Laszlo R. Treiber, Gillette; Lawrence F. Colwell, Jr., Eatontown; Byron H. Arison, Watchung; Georgette Dezeny, Short Hills; Russell B. Lingham, Watchung, all of N.J.; Wayne J. Thompson, Lansdale, and Suresh K. Balani, Hatfield, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 595,895, Oct. 11, 1990, abandoned. This application Feb. 27, 1992, Ser. No. 842,814

Int. Cl.[5] C12P *1/00, 21/04*

U.S. Cl. 435—41 **1 Claim**

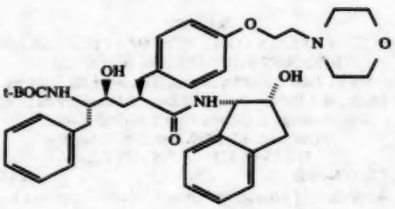
1. A method of preparing a compound of the formula:



1

comprising the steps of

(1) providing a quantity of N-(Cis-2(R)-hydroxy-1(S)-indanyl)-5(S)-(1,1-dimethylethoxycarbonylamino)-4(S)-hydroxy-6-phenyl-2(R)-((4-(2-(4-morpholinyl)ethoxy)-phenyl)methyl)-hexanamide of the formula:



(2) incubating the compound of step (1) with Streptomyces culture #S-26-487 at temperatures ranging from about 20° C. to about 42° C. and at a pH in the range of from about 5.5 to 8.0 under aerobic conditions to prepare compound 1; and

(3) isolating the compound produced by step (2).

5,192,669

METHOD TO PRODUCE RECOMBINANT PROTEINS USING AN EXPRESSION VECTOR COMPRISING TRANSCRIPTIONAL AND TRANSLATIONAL ACTIVATING SEQUENCES

Brigitte E. Schoner, and Ronald G. Schoner, both of Monrovia, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 449,199, Dec. 12, 1989, Pat. No. 5,063,158, which is a continuation-in-part of Ser. No. 118,678, Nov. 9, 1987, abandoned. This application Aug. 13, 1991, Ser. No. 744,612

Int. Cl.[5] C12P *21/06;* **C12N** *1/20, 15/00*

U.S. Cl. 435—69.4 **28 Claims**

1. A method for producing a polypeptide, the method comprising

1) transforming a prokaryotic cell with a recombinant DNA expression vector which sequentially comprises

a) a transcriptional activating sequence,

b) a translational activating sequence selected from the group consisting of

```
1) 5'-CTAGAGGGTATTAATAATCTATCGATTA
                |||||||||||||||||||||||||
   3'-          TCCCATAATTATTAGATAGCTAAT
                AATAAGGAGGAATAACA   -3'
                |||||||||||||||||
                TTATTCCTCCTTATTGTAT-5'

2) 5'-CTAGAGGGTATTAATAATCTATCGATTT
                |||||||||||||||||||||||||
   3'-          TCCCATAATTATTAGATAGCTAAA
                AAATAAGGAGGAATAACA   -3'
                |||||||||||||||||
                TTTATTCCTCCTTATTGTAT-5'
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-continued

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3) 5'-CTAGAGGGTATTAATAATCTATCGATTT
                |||||||||||||||||||||||||
   3'-          TCCCATAATTATTAGATAGCTAAA
                AAAAAAGGAGGAATATAA   -3'
                |||||||||||||||||||
                TTTTTTCCTCCTTATATTAT-5'

4) 5'-CTAGCGATTAAATAAGGAGGAATAACA   -3'
                |||||||||||||||||||||||||
   3'-          GCTAATTTATTCCTCCTTATTGTAT-5'

5) 5'-CTAGCGGATCCGCGATTAAATAAGGAGG
                |||||||||||||||||||||||||
   3'-          GCCTAGGCGCTAATTTATTCCTCC
                AATAACA   -3'
                |||||||
                TTATTGTAT-5'

6) 5'-CTAGCGTTAACGCGATTAAATAAGGAGG
                |||||||||||||||||||||||||
   3'-          GCAATTGCGCTAATTTATTCCTCC
                AATAACA   -3'
                |||||||
                TTATTGTAT-5'

7) 5'-CTAGCGATTTAAATAAGGAGGAATAACA   -3'
                |||||||||||||||||||||||||
   3'-          GCTAAATTTATTCCTCCTTATTGTAT-5'
```

and

```
8) 5'-CTAGCGGGATCCCGCGATTTAAATAAGG
                |||||||||||||||||||||||||
   3'-          GCCCTAGGGCGCTAAATTTATTCC
                AGGAATAACA   -3'
                ||||||||||
                TCCTTATTGTAT-5'
```

wherein

A is deoxyadenyl,

G is deoxyguanyl,

C is deoxycytidyl,

T is thymidyl, and

c) a DNA sequence that codes for the functional polypeptide with a methionine as the first amino acid at the amino-terminus; subject to the limitation that sequences a and b are positioned for microbial expression of sequence c and

2) culturing the transformed cell under conditions suitable for gene expression.

5,192,670

Patent Not Issued For This Number

5,192,671

PROCESS FOR THE GLYCOSYLATION OF AVERMECTIN COMPOUNDS

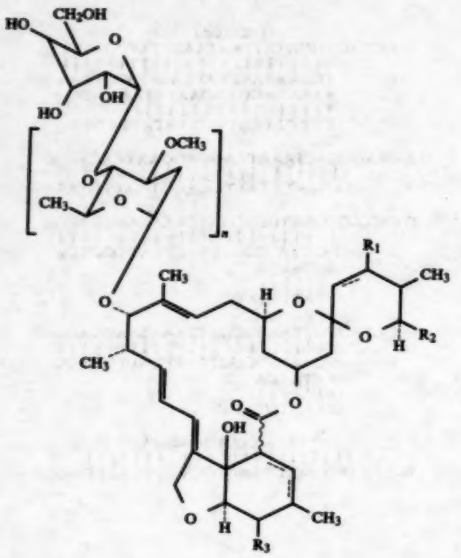
Byron H. Arison, Watchung; Marvin D. Schulman, Scotch Plains, and Patrick J. Doherty, Edison, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 26, 1991, Ser. No. 721,744

Int. Cl.[5] C12P *19/04*

U.S. Cl. 435—101 **5 Claims**

1. A process for the preparation of a compound having the formula:



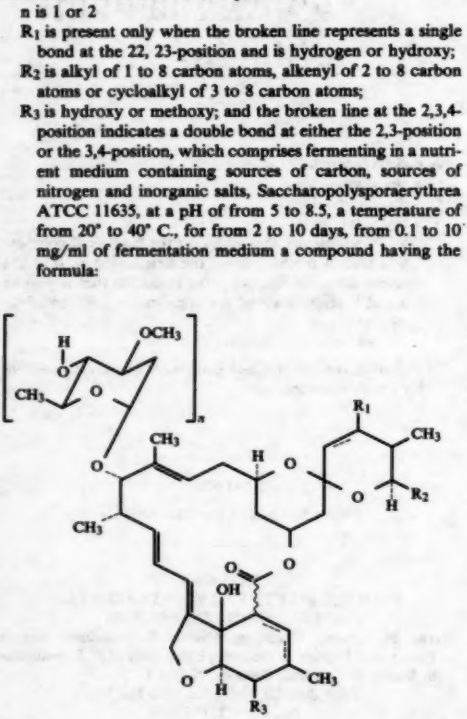
wherein the broken line at the 22, 23-position indicates a single or a double bond at the 22, 23-position;

n is 1 or 2

R_1 is present only when the broken line represents a single bond at the 22, 23-position and is hydrogen or hydroxy;

R_2 is alkyl of 1 to 8 carbon atoms, alkenyl of 2 to 8 carbon atoms or cycloalkyl of 3 to 8 carbon atoms;

R_3 is hydroxy or methoxy; and the broken line at the 2,3,4-position indicates a double bond at either the 2,3-position or the 3,4-position, which comprises fermenting in a nutrient medium containing sources of carbon, sources of nitrogen and inorganic salts, Saccharopolysporaerythrea ATCC 11635, at a pH of from 5 to 8.5, a temperature of from 20° to 40° C., for from 2 to 10 days, from 0.1 to 10 mg/ml of fermentation medium a compound having the formula:



where n, R_1, R_2, and R_3 are as defined above and recovery of the products from the fermentation medium.

5,192,672

METHOD FOR OXIDIZING HYDROCARBONS WITH A HYDROXYLASE FROM A METHANE MONOOXYGENASE

John D. Lipscomb, Wayzata, Minn., assignor to Amoco Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 600,575, Oct. 8, 1990, which is a continuation-in-part of Ser. No. 352,721, May 16, 1989, abandoned. This application Jun. 21, 1991, Ser. No. 718,620

Int. Cl.[5] C12P *17/12, 17/02;* C12N *1/26, 1/28*

U.S. Cl. 435—155 **8 Claims**

1. A method for oxidizing hydrocarbons in the absence of reductase and B components of a soluble methane monooxygenase comprising contacting purified hydroxylase from a soluble methane monooxygenase with said hydrocarbons and hydrogen peroxide until at least a portion of the corresponding oxidized product is produced in an isolable amount.

5,192,673

MUTANT STRAIN OF *C. ACETOBUTYLICUM* AND PROCESS FOR MAKING BUTANOL

Mahendra K. Jain, Okemos; Daniel Beacom, East Lansing, both of Mich., and Rathin Datta, Chicago, Ill., assignors to Michigan Biotechnology Institute, East Lansing, Mich.

Filed Apr. 30, 1990, Ser. No. 516,610

Int. Cl.[5] C12P *7/16;* C12N *1/20*

U.S. Cl. 435—160 **2 Claims**

1. A method of producing butanol which comprises anaerobically culturing a biologically pure culture of *Clostridium acetobutylicum* ATCC 55025 in a nutrient medium with assimilable sources of carbon, nitrogen, and inorganic substances and then recovering the butanol.

5,192,674

THERMOSTABLE DNA POLYMERASE THERMUS THERMOPHILUS AND A METHOD OF PRODUCING THE SAME

Tairo Oshima, Machida; Hitoshi Sakashita; Hakuji Matsumoto, both of Ohtsu, and Yoshihiko Maekawa, Tsuruga, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Aug. 24, 1989, Ser. No. 398,178

Claims priority, application Japan, Aug. 26, 1988, 63-213330

Int. Cl.[5] C12N *9/12*

U.S. Cl. 435—194 **1 Claim**

1. A DNA polymerase derived from *Thermus thermophilus* which has the following characteristics:

(1) it catalyzes the elongation reaction of nucleotide sequence that is complementary to a template nucleotide sequence, using nucleoside triphosphates as substrates;

(2) its optimal pH is approximately 8.0;

(3) its optimal temperature is approximately 75° C.;

(4) it requires magnesium ions, and the optimal magnesium ion concentration being in the range from 6 to 20 mM;

(5) its optimal saline concentration is approximately 20 to 60 mM of sodium chloride or potassium chloride;

(6) its molecular weight is approximately 85,000 to 95,000 daltons (measured by sodium dodecyl sulfate polyacrylamide gel electrophoresis); and

(7) it retains at least about 60% of its activity when placed in a solution comprising 67 mM tris HCl, pH 8.0, 16.6 mM ammonium sulfate, 6.7 mM magnesium chloride, 10 mM 2-mercaptoethanol and 170 μg/ml BSA for 2 hours at 85° C.

5,192,675

CLONED KPNI RESTRICTION-MODIFICATION SYSTEM

Deb K. Chatterjee, N. Potomac, and Alan W. Hammond, Gaithersburg, both of Md., assignors to Life Technologies, Inc., Gaithersburg, Md.

Division of Ser. No. 496,283, Mar. 20, 1990, Pat. No. 5,082,784. This application Jan. 17, 1992, Ser. No. 822,047

Int. Cl.[5] C12N *9/22*

U.S. Cl. 435—199 18 Claims

1. A method of producing a restriction endonuclease which recognizes the palindromic sequence:

5'G GTAC^C3'

3'C^CTAG G5'

wherein said endonuclease cleaves said sequence between the C residues, producing a four-base 3' extension, said method comprising the steps of:

(a) culturing a recombinant host expressing a gene encoding said restriction endonuclease; and

(b) isolating said restriction endonuclease.

5,192,676

TYPE II RESTRICTION ENDONUCLEASE, ASCI, OBTAINABLE FROM ARTHROBACTER SPECIES AND A PROCESS FOR PRODUCING THE SAME

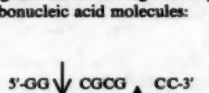
Richard D. Morgan, Middleton, Mass., assignor to New England Biolabs, Inc., Beverly, Mass.

Filed Feb. 5, 1991, Ser. No. 650,802

Int. Cl.[5] C12N *9/22*

U.S. Cl. 435—199 5 Claims

1. A substantially pure Type II restriction endonuclease AscI, which recognizes the following base sequence in double-stranded deoxyribonucleic acid molecules:



and has a cleavage position defined by the arrows.

5,192,677

ALKALI AND HEAT STABLE PROTEASE FROM THERMOMONOSPORA FUSCA

John E. Kinsella; Todd W. Gusek, and David B. Wilson, all of Ithaca, N.Y., assignors to Cornell Research Foundation Inc., Ithaca, N.Y.

Continuation of Ser. No. 174,168, Mar. 28, 1988, which is a continuation-in-part of Ser. No. 930,090, Nov. 13, 1986, abandoned, which is a continuation-in-part of Ser. No. 860,934, May 8, 1986, abandoned. This application Jun. 11, 1991, Ser. No. 713,602

Int. Cl.[5] C12N *9/52, 9/50*

U.S. Cl. 435—220 18 Claims

1. An exocellular protease from *Thermomonospora fusca* YX having the following physicochemical properties:

(1) molecular mass:

the protease has a molecular mass of from about 10,000 to 14,000 Daltons as measured by SDS-polyacrylamide gel electrophoresis;

(2) influence of inhibitors:

the protease activity is inhibited by serine protease inhibitors;

(3) substrate specificity:

a non-specific protease which can hydrolyze food proteins and bovine serum albumin at a rate of 50–100 nmoles peptide bonds/μm enzyme/minute at 55° C., pH 8.5 in 0.05M Tris buffer without showing any substrate and/or product inhibition;

(4) reactivity:

a broad spectrum serine type protease having activity at least 5 times greater than trypsin or chymotrypsin towards bovine serum albumin and food proteins;

(5) optimum activity temperature and temperature range:

the optimum activity temperature is 80° C. at a pH of 8.0 in 0.05M Tris buffer at an ionic strength of 0.2M NaCl; The temperature range is 35° to 95° C. under the same pH, buffer and ionic strength;

(6) pH range and optimum pH value:

the protease has a pH activity range of from about 7 to 11, and the optimum pH is 9.0;

(7) tolerance to ionic strength conditions and optimum ionic strength:

the protease is tolerant to ionic strengths of from 0.0 to about 1.0M NaCl; Optimum ionic strength is 0.2M NaCl;

(8) isoelectric point:

the isoelectric point is at an alkaline pH; and

(9) structure:

the protease is a monomer.

5,192,678

CEPHALOSPORIN C ACYLASE

Morita Iwami, Tsukuba; Ichiro Aramori, Kyoto; Masao Fukagawa, Tsuchiura; Takao Isogai, Ibaraki, and Hitoshi Kojo, Tsuchiura, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Aug. 20, 1991, Ser. No. 747,901

Claims priority, application United Kingdom, Sep. 10, 1990, 9019724

Int. Cl.[5] C12N *9/80*

U.S. Cl. 435—228 2 Claims

1. An isolated and purified cephalosporin C acylase having the following characteristics:

(a) has ability to catalyze the enzymatic conversion of cephalosporin C, glutaryl 7-ACA, adipyl 7-ACA, succinyl 7-ACA, N-acetylcephalosporin C, N-benzoylcephalosporin C and cephalothin into 7-amino cephalosporanic acid,

(b) is composed of an α-subunit with a molecular weight of 26,000 daltons as measured by SDS-PAGE and a β-subunit with a molecular weight of 58,000 daltons as measured by SDS-PAGE,

(c) has N-terminal amino acid sequence of the α-subunit: Thr-Met-Ala-Ala-Asn-Thr-Asp-Arg-Ala-Val-Leu-Gln-Ala-Ala-Leu-Pro-Pro-Leu- (SEQ ID NO:1).

5,192,679

GROWING EHRLICHIA SPECIES IN A CONTINUOUS CELL LINE

Jacqueline E. Dawson, Atlanta, Ga., and Yasuko Rikihisa, Columbus, Ohio, assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Filed May 3, 1990, Ser. No. 518,182

Int. Cl.[5] C12N *5/00, 1/04*

U.S. Cl. 435—243 5 Claims

1. A method for continually growing a bacterial pathogen comprising infecting the immortal, canine, macrophage cell line DH82 with *Ehrlichia canis* and cultivating the infected cells in a suitable culture medium until at least 30% of the DH82 cells are infected.

5,192,680

METHOD FOR PRODUCING SEMICONDUCTOR DEVICE

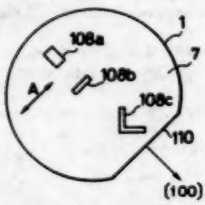
Yasuhiro Naruse, Ischara; Genzo Momma, Tokyo, and Hiroshi Yamrihara, Hiratsuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 2, 1989, Ser. No. 360,341

Claims priority, application Japan, Jan. 6, 1988, 63-138866; Feb. 9, 1989, 1-28686

Int. Cl.[5] H01L *21/205*

U.S. Cl. 437—81 **3 Claims**



1. A method for producing a semiconductor device comprising:

(i) preparing a semiconductor wafer having an isotropic crystal growth speed as a semiconductor substrate, said semiconductor wafer has a (100) orientation flat;

(ii) forming a desired pattern of an embedded layer on surface of said semiconductor wafer;

(iii) forming a stepped pattern on the surface of said wafer such that at least one of the edges of said stepped pattern forms an angle less than 90° with respect to a direction of faster crystal growth of said wafer;

(iv) growing an epitaxial layer on said wafer; and

(v) effecting the alignment of said semiconductor wafer utilizing, as a reference, a step appearing on the surface of said epitaxial layer whereby the semiconductor device having a semiconductor substrate, an embedded layer and a epitaxial layer is formed.

5,192,681

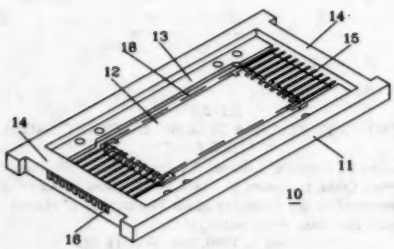
LOW COST ERASABLE PROGRAMMABLE READ ONLY MEMORY PACKAGE

Anthony M. Chiu, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 576,310, Aug. 31, 1990, Pat. No. 5,136,367. This application Apr. 14, 1992, Ser. No. 868,606

Int. Cl.[5] H01L *21/60*

U.S. Cl. 437—217 **2 Claims**



1. A method for manufacturing a low cost package for Erasable-Programmable-Read-Only-Memory device, including a tape leadframe having leads integral connected to the top side of the semiconductor chip, comprising the steps of:

inner lead bonding to leads on a tape leadframe through bumped contacts;

cutting the tape having mounted semiconductor chips into strips of a plurality of mounted chips;

coating the top side of the mounted semiconductor chip with a thin layer of an ultra violet transmissive material;

molding a frame around the encapsulated chip;

trim dam bars;

deflash leads;

singulate the molded frame from the strips;

form test contacts;

test the device; and

trim the semiconductor device from the molded frame prior to mounting the device.

5,192,682

MANUFACTURING METHOD FOR THIN SEMICONDUCTOR DEVICE ASSEMBLIES

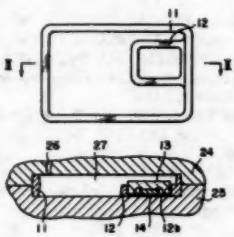
Syojiro Kodai, Itami, and Osamu Murakami, Amagasaki, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 10, 1991, Ser. No. 697,963

Claims priority, application Japan, May 10, 1990, 2-121554

Int. Cl.[5] H01L *21/52, 21/56, 21/58*

U.S. Cl. 437—219 **8 Claims**



1. A manufacturing method for a thin semiconductor device assembly comprising sequentially:

forming a unitary frame for a thin semiconductor device assembly including an external frame having opposed first and second surfaces and a side surface transverse to the first and second surfaces for forming a periphery of a thin semiconductor device assembly and an internal frame for positioning an IC module in the external frame;

positioning an IC module including an integrated circuit and a substrate on which the integrated circuit is mounted, the substrate having an electrode terminal surface on which electrode terminals are disposed, in the internal frame so that the electrode terminal surface of the IC module is; substantially coplanar with the second surface;

filling the external and internal frames with a resin, thereby fixing the IC module in place within the unitary frame; and

curing the resin.

5,192,683

MONOCLONAL ANTIBODIES TO CRUCIFORM DNA STRUCTURE

Gerald Price, Montreal; Maria Zannis-Hadjopoulos, Westmount, both of Canada, and Lori Frappier, New York, N.Y., assignors to The Royal Institution for the Advancement of Learning (McGill University), Quebec, Canada

Continuation-in-part of Ser. No. 16,356, Feb. 19, 1987, abandoned. This application Jul. 25, 1988, Ser. No. 223,610

Int. Cl.[5] C12N *5/20, 15/02;* C07K *15/28;* C12P *21/08*

U.S. Cl. 435—240.27 **12 Claims**

1. A monoclonal antibody of class IgG produced by a hybridoma formed by fusion of cells from a mouse myeloma line and spleen cells from a mouse previously immunized with a stable heteroduplex constructed from two DNA plasmids said

heteroduplex possessing at least one cruciform structure, wherein the antibody:

a) binds specifically to stable cruciform DNA structures;

b) binds specifically to heteroduplex T-shaped DNA structures;

c) does not bind to either double stranded or single stranded linear DNA;

d) does not bind to single stranded DNA containing a single stem-loop or hairpin; and

e) does not bind to native yeast tRNA.

5,192,684

HUMAN IGG_1 MONOCLONAL ANTIBODY SPECIFIC FOR THE NICOTINIC ACETYLCHOLINE RECEPTOR AND HYBRIDOMA PRODUCING THE ANTIBODY

Masao Tanihara; Hideaki Yamada, both of Kurashiki; Toshihide Nakashima, Toyonaka; Yoshiaki Omura, Mitsu, and Koichi Takakura, Nishinomiya, all of Japan, assignors to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan

Filed Mar. 30, 1988, Ser. No. 175,304

Claims priority, application Japan, Sep. 8, 1987, 62-223174

Int. Cl.[5] C12N *5/24, 15/02;* C07K *15/28;* C12P *21/08*

U.S. Cl. 435—240.27 2 Claims

1. Hybridoma strain T/G-59(5C) which is deposited with the Fermentation Research Institute under the accession number FERM BP-1798, obtained by the fusion of human cells which produce an antibody against nicotinic acetylcholine receptor with propagable human lymphoblastoid cell line $G(Ag_1)_2$-cl 7B, whereby said hybridoma produces a human IgG_1 monoclonal antibody which possesses a molecular weight on the range of 180,000±20,000 Daltons as measured under non-reducing conditions by the method of polyacrylamide gel electrophoresis performed in the presence of sodium dodecyl sulfate and is specific for nicotinic acetylcholine receptor.

5,192,685

BIFIDOBACTERIUM STRAINS HAVING HIGH IGA INDUCTION POTENTIAL

Hisako Yasui; Kazuhito Hayakawa; Makoto Ohwaki, and Tatsuhiko Kan, all of Tokyo, Japan, assignors to Kabushiki Kaisha Yakult Honsha, Tokyo, Japan

Filed Apr. 20, 1990, Ser. No. 512,131

Claims priority, application Japan, Apr. 21, 1989, 1-100282

Int. Cl.[5] C12Q *1/00*

U.S. Cl. 435—252.1 4 Claims

1. A biologically pure bacterial strain selected from *Bifidobactierum longum* or *Bifidobacterium breve* having IgA induction potential of 12 or more, which is obtained by the method comprising:

culturing, aseptically in a culture medium, cells of Peyer's patch containing a great amount of IgA production cells, bacterial strains,

adding a solution of a substance which has IgA induction potential to be screened, or a suspension thereof, to the culture medium for culturing for a given period,

measuring the IgA secreted from the IgA production cells in the culture medium after culturing for a given period, and

isolating said strain having IgA induction potential, of 12 or more based on a ratio of the produced IgA in a group containing said bacterial strain to that in a group without said bacterial strain,

said bacterial strain being that of *Bifidobacterium longum* (*B. longum*) or *Bifidobacterium breve* (*B. breve*).

5,192,686

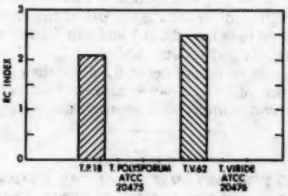
RHIZOSPHERE-COMPETENT TRICHODERMA STRAINS

Syed J. Ahmad, Tahir Ahmadiyya Muslim High School, Mansakonko (L.R.D.) The Gambia, South Africa, and R. Ralph Baker, 1216 Southridge, Ft. Collins, Colo. 80421

Continuation of Ser. No. 72,347, Jul. 10, 1987, abandoned. This application Apr. 20, 1990, Ser. No. 512,748

Int. Cl.[5] C12N *1/14, 15/00;* A01N *63/00;* A01C *1/06*

U.S. Cl. 435—254 2 Claims



1. A rhizosphere competent biocontrol agent, said biocontrol agent comprising *Trichoderma polysporum* ATCC 20852.

5,192,687

ELECTROENZYMATIC METHOD FOR PRODUCING COMPOUNDS OF CONTROLLED ENANTIOMERIC PURITY

Christian Bourdillon, Le Meux; Jacques Moiroux; Jacques P. B. Bonnefoy, both of Paris, and Jean-Marc Laval, Compiegne, all of France, assignors to Centre National de la Recherche Scientifique (CNRS), Paris, France

PCT No. PCT/FR88/00189, § 371 Date Sep. 29, 1989, § 102(e) Date Sep. 29, 1989, PCT Pub. No. WO88/08029, PCT Pub. Date Oct. 20, 1988

PCT Filed Apr. 15, 1988, Ser. No. 432,760

Claims priority, application France, Apr. 17, 1987, 87 05547

Int. Cl.[5] C12P *7/02, 13/04, 7/56*

U.S. Cl. 435—280 18 Claims

1. A process for producing a compound of controlled enantiomeric purity, D-isomer or L-isomer, respectively, from a) a substrate which consists of the oxidized form of the corresponding D/L-P racemate, b) the D/L-P racemate, or c) the optical isomer which is the inverse of that desired; the process comprising introducing (a), (b), or (c), together with an oxidoreductase enzyme capable of catalyzing reversible oxidation of (c) to form a reaction medium, into an electrochemical reactor having electrodes, applying sufficient potential difference between the electrodes to effect non-stereospecific cathodic reduction of (a) until the compound having the desired anantiomeric purity is obtained, and regenerating cosubstrate of the enzyme by anodic oxidation in the electrochemical reactor.

5,192,688

HISTOLOGICAL ANALYSIS METHOD

Robert C. Switzer, III, 10053 Thornton Dr., Knoxville, Tenn. 37922; Shannon K. Campbell, Laurel Ave., Knoxville, Tenn. 37919, and Tere L. Murdock, 6781 Shoreline Cir., Memphis, Tenn. 38115

Continuation of Ser. No. 232,475, Aug. 15, 1988, abandoned. This application Sep. 25, 1991, Ser. No. 765,378

Int. Cl.[5] G01N *21/75*

U.S. Cl. 436—63 8 Claims

1. A method for the histological analysis of tissue for the hallmarks of Alzheimer's Disease comprising the steps of:

selecting a section of nerve tissue,

incubating said section in a first solution of pyridine, silver and carbonate for a period of time sufficient to cause said solution to substantially permeate said section and generate multiple silver micronuclei sites within selected ones of the cell components of said tissue,

said pyridine being present in said first solution at a concentration of between about 2.5% and 12% by volume, developing said section in a physical developer solution comprising (a) silver ions, alkali metal carbonate, ammonium nitrate, Tungstosilicic acid, and formaldehyde as a reducing agent, for time sufficient to produce silver deposits at micronuclei sites generated during incubation of said section,

said quantity of reducing agent being effective for providing control over the development of the micronuclei sites,

thereafter subjecting said section to a dilute acid solution for a time sufficient to reduce the pH of the environment of the section to below about 7 and halt further reduction of silver within said section, and

analyzing said section of nerve tissue for the presence of the hallmarks of Alzheimer's Disease, including neuritic plaques and neurons with neurofibrillary tangles.

5,192,689

METHOD FOR DETERMINING THE ENDOGENOUS THROMBIN POTENTIAL OF PLASMA AND BLOOD

Hendrik C. Hemker, Tongersestraat 41, 6211 LM Maastricht, and Suzette L. Beguin, Akerstraat 12b, 6221CL Maastricht, both of Netherlands

Filed Sep. 27, 1990, Ser. No. 588,924

Claims priority, application Netherlands, Sep. 27, 1989, 8902406

Int. Cl.[5] G01N *33/86*

U.S. Cl. 436—69 **33 Claims**

1. A method for determining the amount of thrombin present in a sample of either clotting blood or plasma through determination of the potential of endogenous thrombin comprising adding a thrombin formation activator to the sample together with a thrombin substrate, wherein the amount and also the kinetic properties of said thrombin substrate are chosen such that the amount of thrombin generated in the sample cannot completely consume said thrombin substrate, thereby to produce a conversion product, measuring the amount of said conversion product thus produced, and from this determining the endogenous thrombin potential in the sample.

5,192,690

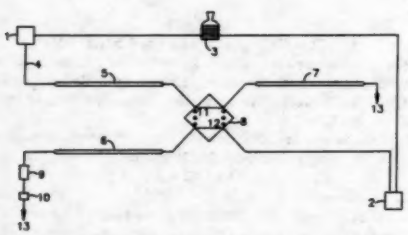
PROCESS FOR THE ANALYTICAL DETERMINATION OF ACETYLCYANAMIDE IN URINE

Ulrich Rust, Trostberg, Fed. Rep. of Germany, assignor to SKW Trostberg Aktiegesellschaft, Trostberg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 603,256, Oct. 25, 1990, abandoned, which is a continuation of Ser. No. 391,435, Aug. 9, 1989, abandoned. This application Jan. 21, 1992, Ser. No. 825,645

Int. Cl.[5] G01N *33/00*

U.S. Cl. 436—106 **8 Claims**



1. A process for the analytical determination of acetylcyanamide in urine comprising:

(a) separating the acetylcyanamide in a sample from one of a purified urine matrix and an extract which is obtained from a purified urine matrix by passing said sample, without derivatisation of said acetylcyanamide, through a first column, separating a first fraction of said acetylcyanamide from the eluent of said first column, and passing the first column fraction through a second ion chromatography column; and

(b) detecting the acetylcyanamide in the eluent of said second column fraction by spectrophotometry at a wavelength of 220 nm.

5,192,691

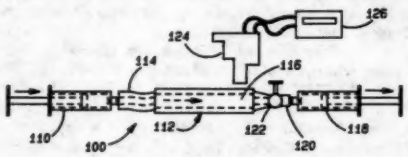
METHOD FOR SENSING INDIVIDUAL ION CONCENTRATIONS WITHIN MIXTURES USING SAMPLE FRONT ION EXCHANGE ELUTION AND INDIRECT PHOTOMETRIC DETECTION

Karen D. Quinn, and Theodore E. Miller, Jr., both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 319,217, Mar. 3, 1989, abandoned. This application Mar. 3, 1992, Ser. No. 845,867

Int. Cl.[5] G01N *30/96*

U.S. Cl. 436—161 **8 Claims**



1. An indirect photometric method of sensing photometrically transparent ion concentrations in situ by frontal analysis comprising:

providing a sample including photometrically transparent ions;

providing a known quantity of detectable ions;

combining said sample and said detectable ions to form a solution prior to forcing either of said sample or said detectable ions into an ion exchange medium;

disposing said solution in a retaining member operable to forcibly urge said solution therefrom upon the application of manual force by an operator thereto;

passing only said solution including said sample with said photometrically transparent ions and said known quantity of detectable ions through an ion exchange medium; and

sensing the detectable ions to indirectly provide qualitative and quantitative information on said photometrically transparent ions from descending sample fronts eluting from said ion exchange medium.

5,192,692

METHOD OF JUDGING PARTICLE AGGLUTINATION PATTERN

Ko Sakai, Pt. Jefferson Sta., and Hiroyuki Yonekawa, St. James, both of N.Y., assignors to Olympus Optical Co., Ltd., Japan

Filed Jul. 25, 1989, Ser. No. 384,497

Int. Cl.[5] G01N *15/04*

U.S. Cl. 436—165 **10 Claims**

1. A method of judging a particle pattern formed on an inclined bottom surface of a reaction vessel, said reaction vessel being formed in a microplate having a plurality of reaction vessels formed therein in a matrix, said method comprising the steps of:

photoelectrically scanning an entire image of said microplate via a plurality of solid state image sensors to derive an image signal representing a two-dimensional image including the entirety of the particle pattern formed in said reaction vessel;

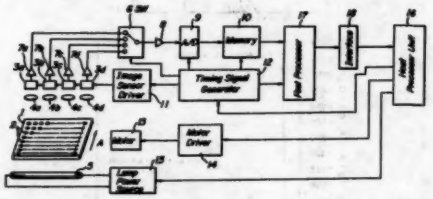
storing image signals supplied from said solid state image sensors in a memory;

detecting a pair of edge positions of said reaction vessel for

each of a plurality of scanning lines passing across said reaction vessel with the aid of a first operator;

calculating a plurality of middle points of detected plural pairs of edge positions of said reaction vessel;

determining a center position of said reaction vessel by deriving an average of said plurality of middle points as a position signal;



processing said image signal of the two-dimensional image on the basis of said position signal to derive at least two characteristics of the particle pattern; and

judging the particle pattern on the basis of said at least two characteristics.

5,192,693

METHOD OF USING CHEMICAL ANALYSIS SLIDE

Kenichiro Yazawa; Masao Kitajima, and Asaji Kondo, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

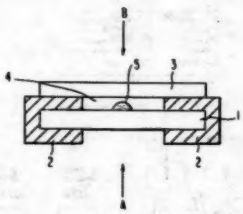
Continuation of Ser. No. 481,934, Feb. 20, 1990, abandoned, which is a continuation of Ser. No. 682,478, Dec. 17, 1984, Pat. No. 4,981,805, which is a continuation of Ser. No. 225,819, Jan. 16, 1981, abandoned. This application May 7, 1991, Ser. No. 700,032

Claims priority, application Japan, Jan. 18, 1980, 3606/80

The portion of the term of this patent subsequent to Jan. 1, 2008, has been disclaimed.

Int. Cl.[5] G01N *21/78*

U.S. Cl. 436—169 **15 Claims**



1. In a method for the colorimetric determination of a specific component in an aqueous liquid sample by applying the aqueous liquid sample to a chemical analysis element for the colorimetric determination, wherein the chemical analysis element is covered after the sample is applied to prevent the evaporation of water, the improvement comprising:

applying a body fluid sample, as the aqueous liquid sample, to said chemical analysis element, said chemical analysis element being a component of a chemical analysis slide comprised of (a) a slide frame and (b) a sheet-like or film-like chemical analysis element for the colorimetric determination, and

covering the upper face of the side of said slide frame which contains the chemical analysis element to which said body fluid sample is applied by placing a sheet-like, plate-like or block or brick-like cover on said upper face of the slide frame to thereby ensure a closed space between said chemical analysis element and said cover and to either prevent evaporation of water, or to control evaporation rate of water, and to control the amount of air or oxygen reaching said aqueous liquid body fluid samples.

5,192,694

ANTI-PCI MONOCLONAL ANTIBODY

Hiroshi Nakao, Ibaraki; Takao Nagoya, Tokorozawa, and Yushi Saino, Tokyo, all of Japan, assignors to Kowa Co., Ltd., Nagoya, Japan

Filed Nov. 5, 1987, Ser. No. 116,908

Claims priority, application Japan, Nov. 14, 1986, 61-269588

The portion of the term of this patent subsequent to Mar. 22, 2005, has been disclaimed.

Int. Cl.[5] G01N *33/577*; C12P *21/08*; C12N *5/20*

U.S. Cl. 436—548 **4 Claims**

1. A monoclonal antibody specific to a human placenta-derived coagulation inhibitor substantially free from glucose having the following properties:

(1) a molecular weight, as determined by SDS-polyacrylamide gel electrophoresis, reduced state, of 34,000±2,000;

(2) an isoelectric point, as determined by isoelectric column electrophoresis, reduced state, of 4.7±0.1;

(3) a stability such that said substance is (a) inactivated by heat treatment at 50° C., for 30 minutes, (b) stable at a pH of 4 to 10, and (c) stable in plasma at 37° C., for 30 minutes,

(4) an activity such that said substance is

(a) capable of prolonging a recalcification time (b) capable of prolonging a prothrombin time,

(c) capable of prolonging an activated partial thromboplastin time; and said substance has

(5) an amino acid composition consisting essentially of, in mole percent: Aspartic acid 9.8, Threonine 7.0, Serine 6.3, Glutamic acid 13.3, Proline 2.0, Glycine 7.5, Alanine 8.0, ½ Cystine 0.3, Valine 4.6, Methionine 1.8, Isoleucine 5.3, Leucine 11.8, Tyrosine 3.6, Phenylalanine 4.2, Histidine 1.4, Lysine 7.2, Arginine 6.2.

5,192,695

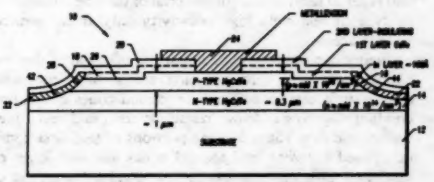
METHOD OF MAKING AN INFRARED DETECTOR

Cheng-Chi Wang; Yet-Zen Liu, both of Westlake Village, and Muren Chu, Thousand Oaks, all of Calif., assignors to Fermionics Corporation, Simi Valley, Calif.

Filed Jul. 9, 1991, Ser. No. 727,402

Int. Cl.[5] H01L *31/18*

U.S. Cl. 437—5 **39 Claims**



1. A method for passivating a junction in a semiconductor device comprising the steps of:

forming a first semiconductor device layer on a substrate;

forming a second semiconductor device layer to form a junction between said first device layer and said second device layer;

grading the composition of said second layer to vary the bandgap of said second layer between said junction and an upper surface of said second layer;

etching selectively each of said first layer and said second layer to form a mesa wherein said mesa has an edge wall, said junction having a lateral edge exposed along said wall; and

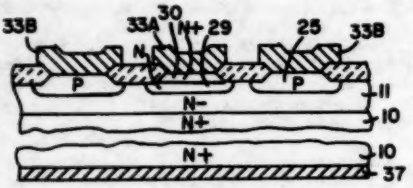
metallizing said wall with a metal forming an ohmic contact with the first one of said first device layer and said second device layer and forming a Schottky barrier with a second one of said first device layer and said second device layer.

5,192,696

FIELD EFFECT TRANSISTOR AND METHOD OF FABRICATING

Emel S. Bulat, Framingham, and Charles Herrick, Reading, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jan. 15, 1992, Ser. No. 821,518
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—27 **6 Claims**



1. The method of fabricating a junction field effect transistor comprising

providing a body of semiconductor material including a substrate of semiconductor material of one conductivity type of relatively low resistivity and a layer of semiconductor material of the one conductivity type of relatively high resistivity contiguous with said substrate; said layer having a surface at a surface of the body;

forming a layer of adherent, nonconductive, protective material adherent at said surface having openings therein exposing alternating source surface areas and gate surface areas;

introducing conductivity type imparting material of the opposite conductivity type into said layer of semiconductor material of the one conductivity type of relatively high resistivity from said gate surface areas to produce gate regions of the opposite conductivity type in said layer of semiconductor material of the one conductivity type of relatively high resistivity at said gate surface areas;

introducing conductivity type imparting material of the one conductivity type into said layer of semiconductor material of the one conductivity type of relatively high resistivity only from said source surface areas to produce first zones of the one conductivity type of lower resistivity in said layer of semiconductor material of the one conductivity type of relatively high resistivity only at said source surface areas;

introducing conductivity type imparting material of the one conductivity type into said first zones only from said source surface areas to produce second zones of the one conductivity type of lower resistivity than said first zones within said first zones leaving portions of said first zones interposed between said second zones and said layer of semiconductor material of the one conductivity type of relatively high resistivity;

said first and second zones forming source regions at said source surface areas; and

applying conductive material to form source and gate contacts in ohmic contact with the second zones of the source regions and with the gate regions, respectively.

5,192,697

SOG CURING BY ION IMPLANTATION

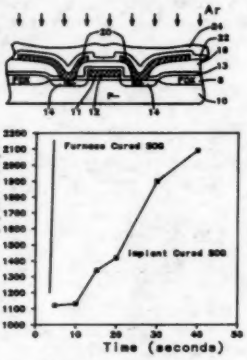
Joe H. K. Leong, Lodge, Singapore, assignor to Chartered Semiconductor Manufacturing PTE Ltd., Singapore, Singapore

Filed Jan. 27, 1992, Ser. No. 826,115
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—37 **23 Claims**

1. The method of curing the spin-on-glass layer of an integrated circuit comprising:

ion implantation of ions into said spin-on-glass layer of an integrated circuit;

the said ions are applied in sufficient dosage and energy to



cause heating within the spin-on-glass layer during their movement through the spin-on-glass layer; and

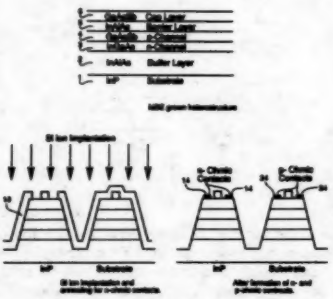
said heating cures the said spin-on-glass layer of the integrated circuit.

5,192,698

MAKING STAGGERED COMPLEMENTARY HETEROSTRUCTURE FET

Fritz L. Schuermeyer, Yellow Springs; Paul E. Cook, Dayton, both of Ohio; Edgar J. Martinez, Charlottesville, Va., and Marino J. Martinez, Dayton, Ohio, assignors to The United State of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 17, 1992, Ser. No. 853,150
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—40 **4 Claims**



3. A method of integrated circuit fabrication for forming staggered complementary heterostructure field effect transistors on the same wafer substrate, comprising:

providing a wafer having a substrate of a semi-insulating compound of a group III and a group V element, on which there is a semi-insulating buffer layer, followed by a n-channel layer, followed by a p-channel layer, followed by an undoped barrier layer, followed by a top layer as a cap layer to improve formation of ohmic contacts, all said layers being epitaxially grown of compounds of group III and group V elements and lattice matched to the substrate;

forming a structure having isolated areas for n-channel and p-channel transistor areas by etching said layers;

depositing and delineating a refractory metal for a gate on each of the isolated areas;

covering the structure with a first photo resist and opening areas for n-ohmic contacts on the isolated areas for the n-channel transistor areas;

ion implanting the areas for n-ohmic contacts with Si ions to obtain low resistance n-ohmic contacts, stripping the first photo resist, and annealing to activate the Si ions;

covering the structure with a second photo resist and opening areas for p-ohmic contacts on the isolated areas for p-channel transistor areas;

ion implanting the areas for p-ohmic contacts with Be ions to obtain a high doping density in these areas, stripping the second photo resist, and annealing to activate the Be ions;

depositing and annealing p-ohmic and n-ohmic metal contacts respectively on the p-ohmic and n-ohmic areas;

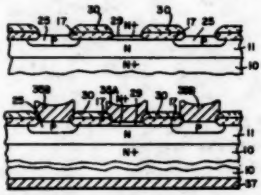
depositing and patterning interconnect metal to complete the integrated circuit.

5,192,699

METHOD OF FABRICATING FIELD EFFECT TRANSISTORS

Emel S. Bulat, and Maureen Sullivan, both of Framingham, Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Dec. 17, 1990, Ser. No. 628,763
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—41 **7 Claims**



1. The method of fabricating a junction field effect transistor comprising

providing a body of silicon including a substrate of silicon of one conductivity type of relatively low resistivity and a layer of silicon of the one conductivity type of relatively high resistivity contiguous with said substrate, said layer having a surface at a surface of the body;

forming a first layer of adherent, nonconductive, protective material adherent at said surface having openings therein exposing alternating source surface areas and gate surface areas with nonconductive, protective material of said first layer between adjacent source and gate surface areas and isolating adjacent source and gate surface areas from each other;

introducing conductivity type imparting material of the opposite conductivity type into said layer of silicon of the one conductivity type of relatively high resistivity from said gate surface areas to produce gate regions of the opposite conductivity type in said layer of silicon of the one conductivity type of relatively high resistivity at said gate surface areas;

introducing conductivity type imparting material of the one conductivity type into said layer of silicon of the one conductivity type of relatively high resistivity from said source surface areas to produce source regions of the one conductivity type of lower resistivity in said layer of silicon of the one conductivity type of relatively high resistivity at said source surface areas;

forming a second layer of adherent, nonconductive, protective material overlying the nonconductive, protective material of said first layer of adherent, nonconductive, protective material between adjacent source and gate surface areas and leaving exposed said source surface areas and said gate surface areas with nonconductive, protective material of said first layer and nonconductive, protective material of said second layer between adjacent source and gate surface areas and isolating adjacent source and gate regions from each other; and

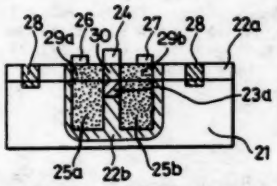
applying conductive material to form source and gate contacts in ohmic contact with the source and gate regions, respectively.

5,192,700

METHOD OF MAKING FIELD EFFECT TRANSISTOR

Teruyuki Shimura, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 289,390, Dec. 22, 1988, Pat. No. 5,101,245. This application Jan. 30, 1992, Ser. No. 828,374
Claims priority, application Japan, Dec. 28, 1987, 62-335887
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—41 **9 Claims**



1. A method of making a field effect transistor including:

depositing on a semi-insulating substrate a semiconductor layer of a first conductivity type;

forming a channel of a second conductivity type opposite from said first conductivity type in said substrate, thereby forming a pn junction with said layer;

disposing a metallic gate electrode on said layer opposite said channel; and

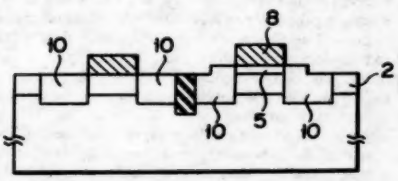
forming spaced apart source and drain regions of said second conductivity type in said layer, extending into said substrate, and contacting said channel, said source and drain regions lying on opposite sides of said gate electrode.

5,192,701

METHOD OF MANUFACTURING FIELD EFFECT TRANSISTORS HAVING DIFFERENT THRESHOLD VOLTAGES

Hiroshi Iwasaki, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 323,697, Mar. 15, 1989, abandoned. This application Oct. 31, 1990, Ser. No. 609,010
Claims priority, application Japan, Mar. 17, 1988, 63-64041
Int. Cl.[5] H01L *21/20, 21/335*
U.S. Cl. 437—41 **2 Claims**



2. A method of manufacturing a field effect transistor, comprising the steps of:

forming a first epitaxial layer of a first conductivity type for forming at least one first channel active layer on a semi-insulating substrate by a crystal growth technique which

is capable of controlling a film thickness at an atomic level;

selectively depositing a second epitaxial layer of said first conductivity type on a portion of said first epitaxial layer for forming at least one second channel active layer having a thickness greater than said first channel active layer by a crystal growth technique which is capable of controlling a film thickness at an atomic level;

forming an element isolation trench between said first channel active layer and second channel active layer;

selectively forming a gate electrode on each of said first channel active layer and said second channel active layer; and

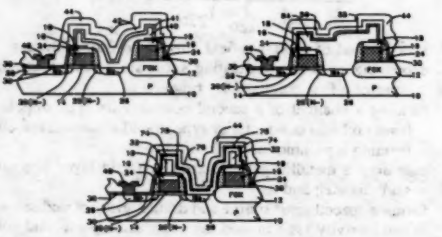
performing ion implantation using said each gate electrode as a mask to form source/drain regions.

5,192,702

SELF-ALIGNED CYLINDRICAL STACKED CAPACITOR DRAM CELL

Horng-Huei Tseng, Hsinchu, Taiwan, assignor to Industrial Technology Research Institute, Hsincho, Taiwan

Filed Dec. 23, 1991, Ser. No. 811,991
Int. Cl.[5] H01L *91/265, 21/70*
U.S. Cl. 437—47 23 Claims



1. A method for fabricating a dynamic random access memory having a high capacitance stacked capacitor comprising:

selectively forming relatively thick field oxide areas on the surface of a semiconductor substrate while leaving device areas for fabrication of field effect devices;

forming a gate dielectric layer on said substrate in the said device areas;

depositing a relatively thick first layer of polysilicon on the said field oxide areas and said device areas;

removing portions of said first polysilicon layer while leaving portions thereof for the gate structure in said device areas, and portions over said field oxide areas;

forming source/drain structures within said device areas of said semiconductor substrate associated with said gate structures;

forming a first insulator layer composed at least in part of silicon nitride over said device and field oxide areas and patterning the layer to leave source/drain structures open in the said device areas where electrical contact is desired to said stacked capacitors; and

forming said stacked capacitors by,

depositing a second polysilicon layer over the device and field oxide areas,

depositing a second insulator layer composed at least in part of silicon nitride over said second polysilicon layer and patterning said second insulator layer and said second polysilicon layer anisotropically with an etch mask to define the stacked capacitor areas,

controlably etching said etch mask to laterally remove a certain portion of the mask and to thereby expose said second insulator layer,

etching the exposed said second insulator layer and removing said etch mask,

thermally oxidizing exposed said second polysilicon layer and removing the said second insulating layer,

anisotropically etching said exposed second polysilicon layer through a portion of its thickness and remove said thermally oxidized layer of polysilicon,

forming a capacitor dielectric layer over the said second polysilicon layer, and

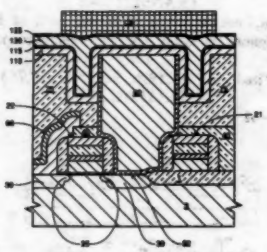
depositing and patterning a third polysilicon layer as the top storage node electrode to complete said stacked capacitors.

5,192,703

METHOD OF MAKING TUNGSTEN CONTACT CORE STACK CAPACITOR

Roger R. Lee, and Fernando Gonzalez, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Oct. 31, 1991, Ser. No. 786,242
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—52 17 Claims



1. A method for forming a plurality of capacitors on a semiconductor substrate comprising:

a) depositing an isolation interlayer to overlie at least said substrate;

b) masking said interlayer with a contact photoresist pattern, said masking defining self-aligned regions in which to form said plurality of capacitors, said contact photoresist pattern also patterning periphery contacts;

c) etching said interlayer to form first openings in said interlayer in order to expose contact areas of said substrate;

d) removing said contact photoresist pattern;

e) depositing a layer of diffusion barrier material to overlie said interlayer and said contact area, said depositing sufficient to effect minimal substrate damage;

f) depositing a refractory metal to overlie said layer of diffusion barrier material and to fill said first opening;

g) removing portions of said layer of diffusion barrier material and said refractory metal in order to expose said interlayer, said removing forming a plurality of cores, each of said plurality comprising said layer of diffusion barrier material and said refractory metal remaining after said removing;

h) masking said interlayer with photoresist, said masking defining further etch regions adjacent to said plurality of said cores;

i) etching said interlayer to expose an upper portion of a sidewall of each of said cores;

j) removing said photoresist;

k) depositing an electrically conductive layer to overlie said sidewalls, said cores, and said interlayer exposed during said etching;

l) depositing a dielectric layer to overlie said electrically conductive layer;

m) performing a wet anneal in order to oxidize said dielectric layer;

n) depositing a capacitive layer to overlie said dielectric layer; and

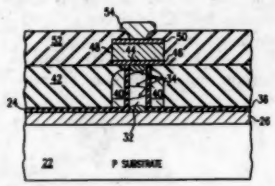
o) individualizing each of said plurality of capacitors.

5,192,704

METHOD AND APPARATUS FOR A FILAMENT CHANNEL PASS GATE FERROELECTRIC CAPACITOR MEMORY CELL

James M. McDavid, Dallas, and David R. Clark, Garland, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 731,305, Jul. 16, 1991, Pat. No. 5,136,534, which is a continuation of Ser. No. 373,431, Jun. 30, 1989, abandoned. This application Apr. 24, 1992, Ser. No. 874,280
Int. Cl.[5] H01L 21/72
U.S. Cl. 437—52 13 Claims



1. A method for constructing a memory cell on a surface of a substrate, comprising the steps of:

forming a transistor comprising a channel comprising a substantially cylindrical semiconductor filament, a first end of said filament formed in contact with a bitline;

forming a wordline disposed about said filament such that said wordline is operable to actuate said channel; and

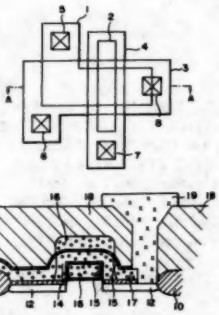
forming a capacitor comprising a first electrode, a storage layer and a second electrode, said first electrode formed substantially vertically above and coupled to a second end of said filament such that said filament is between said bitline and said first electrode, said storage layer formed substantially vertically above said first electrode and said second electrode formed substantially vertically above said storage layer.

5,192,705

METHOD FOR MANUFACTURING SEMICONDUCTOR STACKED CMOS DEVICES

Masahiro Itoh, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Jun. 6, 1991, Ser. No. 711,149
Claims priority, application Japan, Jun. 13, 1990, 2-152720
Int. Cl.[5] H01L 21/70, 27/00
U.S. Cl. 437—57 10 Claims



9. A method of producing a semiconductor stacked CMOS device comprising the steps of:

forming an active area of a lower MOS FET and element isolation areas over a semiconductor substrate by a LOCOS process, and forming silicon nitride films in portions serving as gate areas of lower and upper MOS FETs or leaving a silicon oxide film on said active area of the lower MOS FET when said element isolation areas are formed;

forming source and drain areas of said lower MOS FET on said semiconductor substrate;

after a polycrystalline Si region is formed in an active area of the upper MOS FET through an insulation film formed on said semiconductor substrate, removing said silicon nitride film or silicon oxide film;

forming a gate oxide film for the lower MOS FET on a lower surface of the polycrystalline Si from which said silicon nitride film or said silicon oxide film has been removed, and simultaneously forming a gate oxide film for the upper MOS FET on an upper surface thereof; and

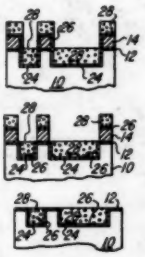
embedding a gate polycrystalline Si film serving as a gate electrode for the lower MOS FET, in the gate film of said lower layer MOS FET, and simultaneously forming a gate polycrystalline Si film serving as a gate electrode for the upper MOS FET, on the gate oxide film of said upper MOS FET.

5,192,706

METHOD FOR SEMICONDUCTOR ISOLATION

Mark S. Rodder, University Park, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 30, 1990, Ser. No. 575,259
Int. Cl.[5] H01L 21/76
U.S. Cl. 437—67 8 Claims



8. A method for isolating a selected area on an integrated circuit substrate, comprising the steps of:

(a) forming an amorphous silicon layer on top of said substrate;

(b) removing portions of said amorphous silicon layer and said substrate to form trenches around selected areas in said semiconductor body;

(c) anisotropically depositing trench-fill material; and

(d) removing said amorphous silicon layer thereby removing said deposited trench-fill material deposited above said amorphous silicon layer.

5,192,707

METHOD OF FORMING ISOLATED REGIONS OF OXIDE

Robert Hodges, Euless, and Frank Bryant, Denton, both of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Jul. 31, 1991, Ser. No. 738,580
Int. Cl.[5] H01L 21/76
U.S. Cl. 437—70 18 Claims

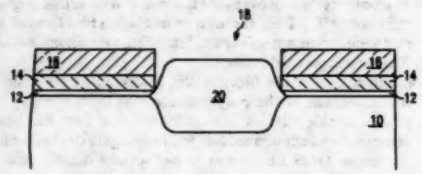
12. A method of forming isolated regions of oxide of an integrated circuit comprising the steps of:

forming a pad oxide layer over the integrated circuit;

forming a nitrogen doped polysilicon layer over the pad oxide layer;

forming a nitride layer over the nitrogen doped polysilicon layer;

forming in the nitrogen doped polysilicon and nitride layers exposing a portion of the pad oxide layer;



annealing the nitrogen doped polysilicon layer to encapsulate the nitrogen doped polysilicon layer in silicon nitride; and,

forming a field oxide region in the opening.

5,192,708

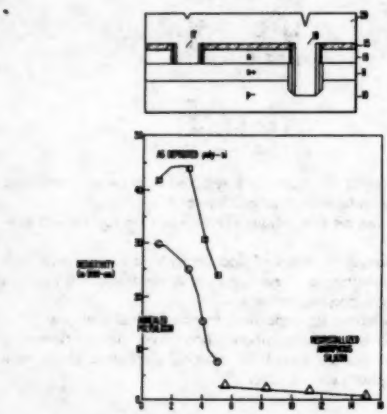
SUB-LAYER CONTACT TECHNIQUE USING IN SITU DOPED AMORPHOUS SILICON AND SOLID PHASE RECRYSTALLIZATION

Klaus Beyer, Poughkeepsi, N.Y.; Edward C. Fredericks, Manassas, Va.; Louis L. Hsu, Fishkill, N.Y.; David E. Kotecki, Hopewell Junction, N.Y., and Christopher C. Parks, Beacon, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 29, 1991, Ser. No. 693,979

Int. Cl.[5] H01L *21/20*

U.S. Cl. 437—90 **12 Claims**



1. A method of filling at least one trench in a surface of a semiconductor substrate comprising the steps of:

providing a surface of said semiconductor substrate having at lest one trench having substantially vertical sidewalls extending down from said surface to a sublayer of said semiconductor substrate to a chemical vapor deposition system;

evacuating and heating said chemical vapor deposition system to a temperature less than 570° C.;

entering a mixture of silicon containing source gas and a dopant source gas into said chemical vapor deposition system to form a layer of doped amorphous silicon filling said trench;

annealing said layer of doped amorphous silicon at a temperature less than 500° C. to form a doped large grained polysilicon layer; and,

activating a dopant in said doped amorphous silicon layer through a short, high temperature anneal.

8. A method of forming a plurality of sublayer contacts in a surface of a semiconductor substrate having a plurality of vertically-walled trenches etched therein and extending to at least one sublayer of said semiconductor substrate comprising the steps of:

depositing a layer of doped amorphous silicon on said surface filing said plurality of trenches in a chemical vapor deposition system at a temperature less than 570° from a mixture of a silicon containing source gas and a dopant source gas;

annealing said layer of doped amorphous silicon at a temperature less than 500° C. to form a doped large grained polysilicon layer; and,

activating a dopant in said doped amorphous silicon layer through a short, high temperature anneal.

5,192,709

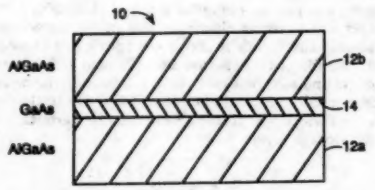
NANOSCALE MODULATION DOPING METHOD

Pierre M. Petroff, Santa Barbara, Calif., assignor to University of California Office of Technology Transfer, Alameda, Calif.

Filed Sep. 17, 1991, Ser. No. 761,308

Int. Cl.[5] H01L *21/20*

U.S. Cl. 437—110 **24 Claims**



1. A method of fabricating a modulation doped structure comprising the steps of:

forming a quantum well layer;

forming a donor implantation layer above said quantum well layer; and

depositing an amount of dopant atoms within said donor implantation layer; substantially all of said deposited dopant atoms being located at a distance from said quantum well layer.

5,192,710

METHOD OF MAKING A SEMICONDUCTOR LASER WITH A LIQUID PHASE EPITAXY LAYER AND A PLURALITY OF GAS PHASE OR MOLECULAR BEAM EPITAXY LAYERS

Michael Schilling, Stuttgart, Fed. Rep. of Germany, assignor to Alcatel N. V., Amsterdam, Netherlands

Filed Apr. 30, 1991, Ser. No. 692,378

Claims priority, application Fed. Rep. of Germany, May 2, 1990, 4014032

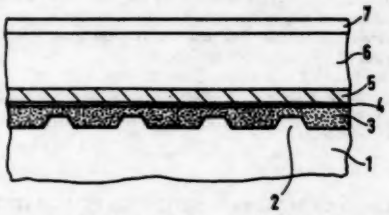
Int. Cl.[5] H01L *21/20*

U.S. Cl. 437—129 **9 Claims**

1. In a method of producing a semiconductor laser comprising the steps of

providing a substrate having a diffraction grating on a surface of the substrate, forming a waveguide layer on the grating, and disposing a plurality of layers on the waveguide layer; the improvement wherein said step of forming a waveguide layer on the grating comprises forming

the waveguide layer by liquid phase epitaxy, and wherein said step of disposing comprises growing the plurality of



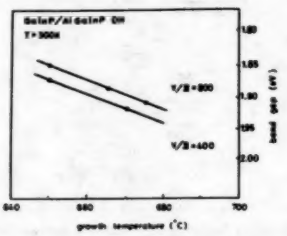
layers on the waveguide layer by means of one of a gas phase and a molecular beam epitaxy process.

5,192,711

METHOD FOR PRODUCING A SEMICONDUCTOR LASER DEVICE

Takashi Murakami, and Nobuaki Kaneno, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 583,135, Sep. 17, 1990, Pat. No. 5,105,432.
This application Jan. 21, 1992, Ser. No. 822,662
Claims priority, application Japan, Sep. 18, 1989, 1-241418
Int. Cl.[5] H01L *21/20*
U.S. Cl. 437—129 5 Claims



1. A method for producing a semiconductor laser device having a double heterojunction structure comprising AlGaInP series semiconductor layers including a p type GaAs contact layer, a p type AlGaInP cladding layer, and a p type GaInP buffer layer disposed between and contacting said contact and cladding layers comprising:

growing a portion of said p type GaInP buffer layer on said p type AlGaInP cladding layer at a first temperature to produce GaInP having a first energy band gap and growing a portion of said buffer layer adjacent to said p type GaAs contact layer at a second temperature lower than the first temperature to produce GaInP having a second energy band gap smaller than the first energy band gap.

5,192,712

CONTROL AND MODERATION OF ALUMINUM IN SILICON USING GERMANIUM AND GERMANIUM WITH BORON

Sheldon Aronowitz, and Amolak Ramde, both of San Jose, Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

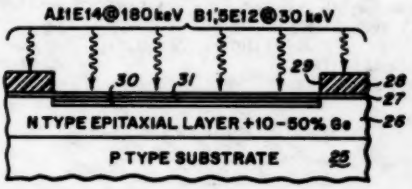
Filed Apr. 15, 1992, Ser. No. 868,808
Int. Cl.[5] H01L *21/266*
U.S. Cl. 437—143 6 Claims

1. A process for controlling the diffusion of aluminum in silicon to form PN junction isolation regions in a monolithic integrated circuit silicon wafer comprising the steps of:

incorporating germanium into said silicon wafer in those regions where an isolation diffusion is desired by ion implantation prior to the incorporation of aluminum to produce a germanium concentration of about 10 atoms % to about 50 atomic %

annealing said silicon, with said germanium therein, to drive said germanium to take up substitutional atomic sites in the crystal lattice of said silicon;

applying aluminum to said silicon after said annealing in said regions where an isolation diffusion is desired; and



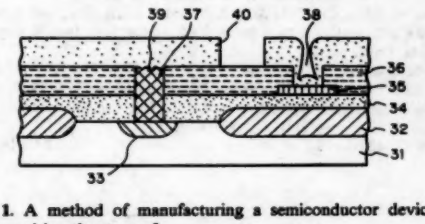
diffusing said aluminum whereby said diffusion is retarded where said germanium is present and, therefore, said diffusion is relatively enhanced after said aluminum has diffused completely through said germanium containing silicon.

5,192,713

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES HAVING MULTI-LAYERED STRUCTURE

Yusuke Harada, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Feb. 20, 1991, Ser. No. 658,239
Claims priority, application Japan, Feb. 27, 1990, 2-44628
Int. Cl.[5] H01L *21/44, 21/48*
U.S. Cl. 437—192 14 Claims



1. A method of manufacturing a semiconductor device, comprising the steps of:

(a) preparing a semiconductor substrate;

(b) forming a field oxide layer on a surface of the substrate for isolation between active areas;

(c) forming a diffusion layer in an active area of the surface of the semiconductor substrate;

(d) depositing a first insulating interlayer on the surface of the semiconductor substrate;

(e) forming a W-polycide layer including As on a selected portion of the first insulating interlayer;

(f) depositing a second insulating interlayer on the first insulating interlayer and on the W-polycide layer;

(g) forming a first contact hole with a shallow depth on the W-polycide layer and a second contact hole with a deep depth on the diffusion layer;

(h) depositing a W layer in only the second contact hole by selective CVD to fill the second contact hole so as not to form a step with the second insulating interlayer; and,

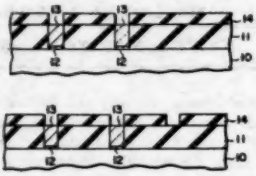
(i) forming a wiring layer on the surface of the second insulating layer to contact the W layer in the second contact hole and the W-polycide layer via the first contact hole.

5,192,714

METHOD OF MANUFACTURING A MULTILAYERED METALLIZATION STRUCTURE IN WHICH THE CONDUCTIVE LAYER AND INSULATING LAYER ARE SELECTIVELY DEPOSITED

Kyoichi Suguro, Yokohama, and Haruo Okano, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 13, 1991, Ser. No. 654,895
Claims priority, application Japan, Feb. 14, 1990, 2-32689; Feb. 7, 1991, 3-16586
Int. Cl.[5] H01L *21/28, 21/283*
U.S. Cl. 437—195 12 Claims



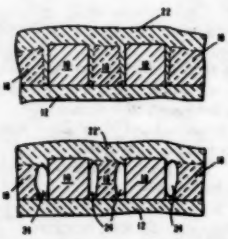
1. A method of manufacturing a semiconductor device, comprising the steps of:
forming a first insulating layer having a hole on a substrate;
selectively forming a conductive layer in said hole;
selectively forming a second insulating layer on said first insulating layer;
patterning said second insulating layer; and
forming an interconnection layer in an opening portion of said second insulating layer formed by patterning so as to be electrically connected to said conductive layer.

5,192,715

PROCESS FOR AVOIDING SPIN-ON-GLASS CRACKING IN HIGH ASPECT RATIO CAVITIES

John W. Sliwa, Jr., Palo Alto, and Pankaj Dixit, San Jose, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Division of Ser. No. 652,306, Feb. 5, 1991, Pat. No. 5,119,164, which is a continuation of Ser. No. 385,649, Jul. 25, 1989, abandoned. This application Apr. 24, 1992, Ser. No. 873,920
Int. Cl.[5] H01L *21/316*
U.S. Cl. 437—195 22 Claims



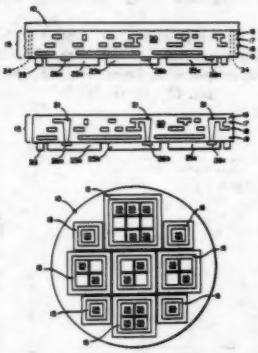
1. A process for avoiding stress-cracking in spin-on-glass used in high aspect ratio cavities between metal interconnects formed on an dielectric substrate supported on a semiconductor wafer, each said interconnect having sidewalls and a top surface, said process comprising:
(a) exposing said sidewalls and said top surface of each interconnect so as to permit subsequent selective tungsten deposition on said interconnects;
(b) growing a layer of selective tungsten on said exposed sidewalls and top of each interconnect;
(c) forming a spin-on-glass layer covering said interconnects, including filling cavities therebetween;
(d) soft-curing said spin-on-glass layer;
(e) etching said spin-on-glass layer to expose said top surfaces of said metal interconnects and leave free-standing portions of said spin-on-glass between said interconnects;
(f) removing at least that tungsten remaining on said sidewalls of said metal interconnects;
(g) hard-curing said spin-on-glass portions; and
(h) forming a layer of a dielectric material covering said spin-on-glass portions and said top surfaces of said metal interconnects.

5,192,716

METHOD OF MAKING A EXTENDED INTEGRATION SEMICONDUCTOR STRUCTURE

Scott L. Jacobs, Apex, N.C., assignor to Polylithics, Inc., San Diego, Calif.

Division of Ser. No. 301,972, Jan. 25, 1989, Pat. No. 5,055,907. This application Jul. 24, 1991, Ser. No. 735,340
Int. Cl.[5] H01L *21/60*
U.S. Cl. 437—209 106 Claims



1. A method of forming an extended integration structure comprising the steps of:
forming on a support substrate; a thin film decal having at least one wiring layer therein;
aligning at least one integrated circuit chip to said thin film decal;
attaching the at least one integrated circuit chip to said thin film decal;
mounting a support ring on said thin film decal, surrounding said at least one integrated circuit chip;
removing said support substrate; and
electrically connecting said at least one wiring layer to said at least one integrated circuit chip.

5,192,717

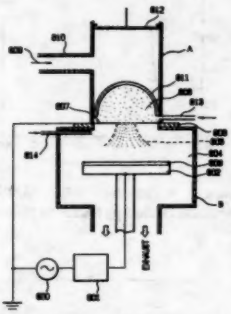
PROCESS FOR THE FORMATION OF A POLYCRYSTALLINE SEMICONDUCTOR FILM BY MICROWAVE PLASMA CHEMICAL VAPOR DEPOSITION METHOD

Soichiro Kawakami, Hikone; Masahiro Kanai, Tokyo, and Takeshi Aoki, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 515,640, Apr. 27, 1990, abandoned. This application Dec. 2, 1991, Ser. No. 799,900
Claims priority, application Japan, Apr. 28, 1989, 1-107391; Apr. 28, 1989, 1-107392; Apr. 20, 1990, 1-102926
Int. Cl.[5] H01L *21/00, 21/02, 21/306*
U.S. Cl. 439—233 4 Claims

1. A process for forming a polycrystalline semiconductor film on an insulating substrate which comprises using a MWPCVD apparatus comprising a plasma generation cham-

ber provided with a microwave introducing means, and a film-forming chamber connected through a grid electrode to said plasma generation chamber, said film-forming chamber containing said insulating substrate positioned on a substrate holder made of a conductive material being installed therein, producing plasma by contacting a film-forming raw material gas with a microwave energy applied through said microwave introducing means in said plasma generation chamber and



introducing said plasma into said film-forming chamber while maintaining the inner pressure of said film-forming chamber at a vacuum of 1×10^{-4} to 5×10^{-3} Torr and applying a high frequency voltage with a frequency in the range of from 20 MHz to 500 MHz between said grid electrode and said substrate holder to thereby cause the formation of polycrystalline semiconductor film on said insulating substrate maintained at a temperature in the range of from 200° to 400° C.

5,192,718

LEAD SILICATE GLASSES

Paul S. Danielson, Corning, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed Oct. 24, 1991, Ser. No. 782,528
Int. Cl.[5] C03C *3/105*
U.S. Cl. 501—60 **12 Claims**

1. A family of lead silicate glasses having internal liquidi below 750° C., electrical resistivities over 8.0 ohm-cm (Log $R_{350°}$ C.) and linear x-ray absorption values of at least 95 cm^{-1} at a wavelength of 0.6 Angstrom units, the glasses having compositions consisting essentially of, in weight percent as calculated on an oxide basis, 46–51% SiO_2, 0.5–2% Al_2O_3, 0.3–3% Na_2O, 9–13% K_2O, 2.5–6% SrO, 1–4% BaO, 30–33% PbO and 0.3–1% Sb_2O_3.

5,192,719

METHOD OF PRODUCING HIGH-STRENGTH β-TYPE SILICON CARBIDE SINTERED BODIES

Hidetoshi Yamauchi, Gifu; Haruhisa Hasegawa, and Yasuji Hiramatsu, both of Ohgaki, all of Japan, assignors to Ibiden Co., Ltd., Japan

Continuation of Ser. No. 298,887, Jan. 11, 1989, abandoned. This application Sep. 30, 1991, Ser. No. 768,337
Int. Cl.[5] C04B *35/56*
U.S. Cl. 501—88 **2 Claims**

1. A method of producing a high-strength β-type silicon carbide sintered body, comprising the following steps:

combining starting materials of β-type silicon carbide powder, elemental boron or a boron-containing compound in an amount of 0.1–2.0 wt % in boron, and elemental carbon or a carbon-containing compound in an amount of 1.0–5.0 wt % in carbon;

forming the starting materials into a shaped body; and

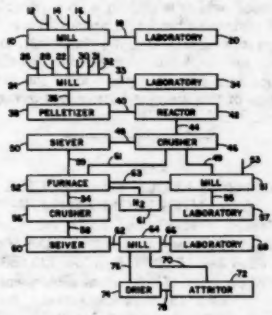
heating the shaped body within a temperature range of 1200°–1600° C. in a non-oxidizing atmosphere for 1–3 hours and then to a sintering temperature of not lower than 1900° C. at a rate of 0.3°–2.5° C./min in a non-oxidizing atmosphere, and thereafter holding the shaped body at the sintering temperature.

5,192,720

SIALON COMPOSITION

George T. Hida; Rodica S. Hida, both of Amherst, and Cezar C. Delcea, Cheektowaga, all of N.Y., assignors to Benchmark Structural Ceramics Corporation, Amherst, N.Y.

Continuation-in-part of Ser. No. 535,035, Jun. 7, 1990, Pat. No. 5,030,600, Ser. No. 365,606, Jun. 13, 1989, abandoned, Ser. No. 364,014, Jun. 19, 1989, abandoned, Ser. No. 339,137, Apr. 14, 1989, Pat. No. 4,957,885, and Ser. No. 254,175, Oct. 6, 1988, Pat. No. 5,006,290. This application Jun. 27, 1991, Ser. No. 722,104
Int. Cl.[5] C04B *35/58*
U.S. Cl. 501—98 **3 Claims**



1. A process for preparing a composition of the formula $Si_{6-z}Al_zO_zN_{8-z}$, wherein z is from about 2.5 to about 3.5, and wherein said composition is comprised of from about 35 to about 25 weight percent of silicon, from about 24 to about 33 weight percent of aluminum, from about 14 to about 20 weight percent of oxygen, and from about 27 to about 22 weight percent of nitrogen, comprising the steps of:

(a) providing a mixture comprising from about 28 to about 38 weight percent (by weight of aluminum material, aluminum nitride, and silica) of aluminum material, from about 5 to about 25 weight percent of aluminum nitride, and from about 45 to 65 weight percent of silica, wherein:

1. said aluminum material is selected from the group consisting of aluminum, aluminum alloy and mixtures thereof, wherein:
   (a) said aluminum material comprises less than about 1.0 weight percent of combined oxygen and less than about 0.1 weight percent of moisture, and
   (b) said aluminum material has a specific surface area of from about 0.2 to about 1.1 square meters per gram, and the particles of said material range in size from about 4 to about 28 microns;
2. said aluminum nitride is comprised of less than about 2.0 weight percent of combined oxygen and less than about 0.1 weight percent of moisture; and
3. said silica is comprised of less than about 0.1 weight percent of moisture, and substantially all of the particles of said silica are smaller than about 53 microns;

(b) thereafter comminuting said mixture while contacting it with nitrogen until said mixture, as revealed by scanning electron microscopy, comprises substantially a single phase material;

(c) thereafter heating said material to a temperature of at least about 760 degrees centigrade until ignition occurs; and

(d) thereafter cooling the ignited material.

5,192,721

PROCESS FOR LINING A DISTRIBUTOR FOR CONTINUOUS CASTING OF METALS WITH A REFRACTORY MATERIAL CORRESPONDING DISTRIBUTOR AND REFRACTORY LINING

Joseph G. Provost, Bergues, France, assignor to Sollac, Puteaux, France

PCT No. PCT/FR90/00130, § 371 Date Aug. 23, 1991, § 102(e) Date Aug. 23, 1991, PCT Pub. No. WO90/09970, PCT Pub. Date Sep. 7, 1990

PCT Filed Feb. 26, 1990, Ser. No. 752,667

Claims priority, application France, Feb. 27, 1991, 8902926

Int. Cl.[5] C04B *35/06, 35/22*

U.S. Cl. 501—113 12 Claims

1. A process for lining a distributor for continuous casting of metals, according to which a layer of refractory wear lining is placed in position in aqueous form, characterized in that said refractory wear lining is prepared from a material consisting essentially of raw natural dolomite or raw natural calcite, or of a mixture thereof, which is chosen with a particle size of between 0 and 5 mm, and a binder, in proportions of 0.5 to 5% by weight, and an inorganic or organic plasticizer, in proportions of 0.2 to 3% by weight, are incorporated in this material and in that after it has been placed in position on the distributor, the decarbonization of this lining is carried out during the drying and calcining thereof.

5,192,722

HIGH DENSITY LEUCITE/POLLUCITE BASED CERAMICS FROM ZEOLITE

Robert L. Bedard, Fishkill, and Edith M. Flanigen, White Plains, both of N.Y., assignors to UOP, Des Plaines, Ill.

Filed Jul. 15, 1991, Ser. No. 729,660

The portion of the term of this patent subsequent to Dec. 10, 2008, has been disclaimed.

Int. Cl.[5] C04B *35/10*

U.S. Cl. 501—128 11 Claims

1. A substantially crack free ceramic article having less than 5% porosity, having as its principal crystalline phase a leucite/pollucite solid solution and having an empirical formula expressed in terms of the metal oxides:

$$vNa_2O{:}wK_2O{:}xRb_2O{:}yCs_2O{:}zSiO_2{:}Al_2O_3$$

where v is less than 0.5, w varies from about 0.01 to about 0.99, x varies from about 0.01 to about 0.99, y varies from about 0.99 to about 0.01, z varies from about 3.5 to about 7.5 and $v+w+x+y=1$, the ceramic article characterized in that it has a coefficient of thermal expansion of about 2×10^{-6} to about $27\times10^{-6}°C.^{-1}$ over the range 50° to 700° C.

5,192,723

METHOD OF PHASE TRANSITION, METHOD FOR PRODUCING LEAD NIOBATE-BASED COMPLEX OXIDE UTILIZING SAID PHASE TRANSITION METHOD, AND LEAD NIOBATE-BASED COMPLEX OXIDE PRODUCED BY SAID METHOD

Takamitsu Fujiu, Tokyo; Akira Tanaka; Kenichi Muramatsu, both of Kawasaki, and Tetsuo Hattori, Yokohama, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Sep. 3, 1991, Ser. No. 754,015

Claims priority, application Japan, Sep. 4, 1990, 2-233871; Apr. 11, 1991, 3-078909; May 13, 1991, 3-107320

Int. Cl.[5] C04B *35/46, 35/48, 35/49*; H01B *1/00*

U.S. Cl. 501—136 5 Claims

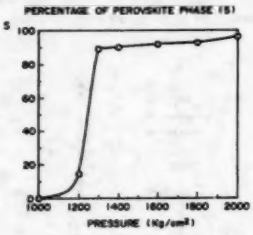
1. A method of producing a lead niobate-based complex oxide which comprises treating a raw material represented by a general formula:

$$Pb(A_{\frac{1}{3}}Nb_{\frac{2}{3}})_x(Zn_{\frac{1}{3}}Nb_{\frac{2}{3}})_yO_3 \text{ or}$$

$$Pb(Fe_{\frac{1}{2}}Nb_{\frac{1}{2}})_x(Zn_{\frac{1}{3}}Nb_{\frac{2}{3}})_yO_3 \quad (I)$$

wherein A is Mg or Ni; x is an atomic ratio within a range of 0–1; and y is an atomic ratio within a range of 1–0 with a relation $x+y=1$, and containing pyrochlore phase, under conditions of:

a high temperature in a range of 500°–1300° C. and



a high pressure in a range of 1000–4000 kg/cm^2 thereby causing transition of said pyrochlore phase into perovskite phase.

5,192,724

REACTIVATION OF SPENT CRACKING CATALYSTS

Chia-Min Fu, and Michael K. Maholland, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 17, 1992, Ser. No. 852,475

Int. Cl.[5] B01J *29/38, 38/62*; C10G *11/05*

U.S. Cl. 502—28 21 Claims

1. A process for reactivating a spent cracking catalyst composition comprising the step of contacting a spent zeolite-containing catalytic cracking catalyst composition which contains at least one metal contaminant selected from the group consisting of nickel compounds and vanadium compounds with an aqueous solution comprising both dissolved lactic acid and at least one dissolved calcium compound;

wherein said catalyst reactivation process produces a reactivated catalytic cracking catalyst composition exhibiting lower hydrogen generation, when employed in catalytic cracking of a hydrocarbon-containing oil, than said spent zeolite-containing catalytic cracking catalyst composition; wherein said aqueous solutions is essentially free of antimony, bismuth and fluorine and contains about 0.001–10 mol/l of lactic acid; and wherein about 0.01–1 weight-% of calcium has been incorporated into said reactivated catalytic cracking catalyst composition.

5,192,725

GALLIUM/GERMANIUM DIOCTAHEDRAL SMECTITE CLAY AND PROCESS FOR PREPARING THE CLAY

Jennifer S. Holmgren, Bloomingdale, Ill., assignor to UOP, Des Plaines, Ill.

Filed Sep. 3, 1991, Ser. No. 753,511

Int. Cl.[5] B01J *20/06, 21/16*

U.S. Cl. 502—61 19 Claims

1. A dioctahedral smectite layered clay composition having the empirical formula

$$A_x[M_4](M'_{8-x}M_x)(O_{20})(OH)_4$$

where A is a templating agent, M is aluminum or gallium, M' is silicon or germanium, except that when M is aluminum, M' is not silicon and x is the moles of A and varies from about 0.1 to about 2.0.

5,192,726

BEIDELLITE CLAY AND PROCESS FOR PREPARING THE CLAY

Jennifer S. Holmgren, Bloomingdale, Ill., assignor to UOP, Des Plaines, Ill.

Filed Sep. 3, 1991, Ser. No. 753,514
Int. Cl.[5] B01J 20/16, 21/16
U.S. Cl. 502—62 11 Claims

1. A beidellite layered clay composition having the empirical formula

$$A_x[Al_4](Si_{8-x}Al_x)(O_{20})(OH_4)$$

where A is a templating agent and x is the moles of the templating agent and varies from about 0.1 to about 2.0, the composition characterized in that it has crystals whose average crystallite size is about 50–150 Angstroms, has a surface area of at least 80 m^2/g, has its 060 X-ray diffraction peak at a d-spacing of 1.50 Angstroms and is substantially free of sodium cations.

2. The composition of claim 1 where the clay layers are separated by pillars selected from the group consisting of alumina, rare earth containing alumina, ZrO_2, TiO_2, Cr_2O_3, SiO_2 and silica/alumina.

3. The composition of claim 1 where A is selected from the group consisting of secondary amines, tertiary amines, quaternary ammonium ions, quaternary phosphonium ions and mixtures thereof.

5,192,727

PROCESS FOR MODIFYING THE PORE SYSTEM OF ZEOLITE LZ-202

Vinayan Nair, East White Plains; Donald F. Best, Mahopac, and Lawrence D. Vail, Tappan, all of N.Y., assignors to UOP, Des Plaines, Ill.

Filed Aug. 19, 1991, Ser. No. 747,050
Int. Cl.[5] B01J 29/06
U.S. Cl. 502—64 6 Claims

1. Process for treating a zeolite having the mazzite crystal structure and crystallized from a reaction mixture essentially free of amine or quaternary ammonium templating agents to increase its adsorptive capacity for molecular species having kinetic diameters of at least about 5.5×10^{-4} micrometers which comprises the steps of:

(a) providing said zeolite in the alkali metal cation form as the starting material;

(b) contacting the composition of step (a) with an aqueous solution of non-metallic cations under ion-exchange conditions to lower the alkali metal content to below 0.1 equivalent per cent;

(c) calcining the ion-exchanged product of step (b) in contact with at least 3 psia steam at a temperature of from about 300° C. to 800° C.; and thereafter;

(d) contacting the steamed product of step (c) with a sufficient amount of an aqueous solution of ammonium ions having a pH of less than about 4.0 and for a sufficient time to increase the bulk Si/Al_2 ratio of the zeolite composition with respect to the starting composition of step (a) and to a value of at least 7.0.

5,192,728

TIN-COLATING MICROPOROUS CRYSTALLINE MATERIALS AND THEIR USE AS DEHYDROGENATION, DEHYDROCYCLIZATION REFORMING CATALYSTS

Ralph M. Dessau, Edison, N.J.; Ernest W. Valyocsik, Yardley, and James C. Vartuli, West Chester, both of Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Division of Ser. No. 211,198, Jun. 24, 1988, Pat. No. 4,990,710.
This application Oct. 6, 1989, Ser. No. 418,377
Int. Cl.[5] B01J 29/30
U.S. Cl. 502—66 32 Claims

1. A non-acidic catalyst composition consisting essentially of dehydrogenation metal and a non-acidic microporous crystalline material containing tin.

4. The catalyst composition of claim 1 wherein the material exhibits an X-ray diffraction pattern of a zeolite.

5. The catalyst composition of claim 1, wherein the dehydrogenation metal is a Group VIII metal.

5,192,729

HIGHLY ACTIVE ZIEGLER-NATTA CATALYST FOR POLYMERIZING HDPE AND LLDPE AND METHOD FOR PREPARATION THEREOF

Seong I. Woo, Seoul, and Il Kim, Kyungsangnam-Do, both of Rep. of Korea, assignors to Korea Advanced Institute of Science and Technology, Daejeon, Rep. of Korea

Filed Oct. 9, 1991, Ser. No. 773,512
Claims priority, application Rep. of Korea, Oct. 10, 1990, 16059/1990
Int. Cl.[5] C08F 4/649, 4/654
U.S. Cl. 502—104 22 Claims

1. A highly active Ziegler-Natta catalyst for ethylene polymerization, comprising:

a catalyst precursor obtained by reacting a magnesium compound, a halogen compound, and a titanium compound with an electron donor compound, wherein the molar ratio of magnesium to titanium is between 1 and 10, and the molar ratio of halogen to magnesium is between 0.5 and 5;

a surfactant in an amount of between 5% and 10% by weight of the magnesium compound; and

an organoaluminum compound for partially activating the catalyst, the organoaluminum compound being present in an amount such that the molar ratio of aluminum to titanium is between 1 and 10.

5,192,730

STABLE SOLUTIONS OF TETRA(HYDROCARBYL)METAL COMPOUNDS AND USE THEREOF FOR CATALYST PREPARATION

Steven D. Ittel, Wilmington, and Frederick N. Tebbe, Hockessin, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 13, 1991, Ser. No. 791,943
Int. Cl.[5] C08F 4/64
U.S. Cl. 502—108 14 Claims

1. A composition comprising a chemically stable solution of:

a tetra(hydrocarbyl)metallic compound of the formula, $(RCH_2)_4M$, wherein M is an element selected from the group consisting of Ti, Zr and Hf, and R is a hydrocarbyl group wherein the carbon atom located β to M is devoid of hydrogen,

in an olefin of the formula, $R^1R^2C{=}CR^3R^4$, wherein each of R^1 and R^2, independently, is an aliphatic group containing 1–10 carbon atoms, or an aralkyl group containing 7–10 carbon atoms; and each of R^3 and R^4, independently, is H, an aliphatic group containing 1–10 carbon atoms, or an aralkyl group containing 7–10 carbon atoms; or wherein R^1, taken together with either R^2, R^3, or R^4 forms a carbocyclic ring containing 5–12 carbon atoms;

wherein the final concentration of said tetra(hydrocarbyl)-metallic compound in solution is at least about 0.01 mol/L.

5,192,731

TITANIUM CATALYST COMPONENTS, PROCESS FOR PREPARING SAME, CATALYSTS CONTAINING SAME FOR PREPARING ETHYLENE POLYMERS AND PROCESS FOR PREPARING SAID ETHYLENE POLYMERS

Mamoru Kioka; Kazumitsu Kawakita, and Akinori Toyota, all of Kuga, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 415,335, Sep. 18, 1989, abandoned. This application Oct. 23, 1991, Ser. No. 781,667

Claims priority, application Japan, May 13, 1988, 63-116626; May 13, 1988, 63-116627; May 18, 1988, 63-122655; May 18, 1988, 63-122656; Jul. 20, 1988, 63-181406; Jul. 20, 1988, 63-181407

Int. Cl.[5] C08F 4/646

U.S. Cl. 502—110 20 Claims

12. A process for preparing a carrier-supported titanium catalyst component containing magnesium, aluminum, halogen and titanium as essential ingredients, which process comprises preparing a magnesium containing support (I) by bringing a support into contact with an organometallic compound of a metal of the Group II to IIIA of the periodic table having at least one hydrocarbon group attached directly to the metal atom or with a halogen containing compound selected from the group consisting of halogenated hydrocarbon, hydrogen halide, halogen and a compound having halogen atoms directly attached to silicon, tin, phosphorus, titanium or vanadium element, contacting the treated support with a magnesium compound in the liquid state containing a magnesium compound and an alcohol, and having no reducing ability, and then bringing the resulting magnesium containing support into contact with a reducing organometallic compound (II) and a titanium compound in the liquid state (III).

5,192,732

PROPYLENE POLYMERIZATION COCATALYST CONTAINING SILANE AND RESULTANT CATALYSTS

Laurent Duranel, Arthez de Bearn; Roger Spitz, St Syphorien d'Ozon, and Thierry Soto, Lyons, all of France, assignors to Atochem, France

Filed Nov. 22, 1991, Ser. No. 798,235

Claims priority, application France, Nov. 27, 1990, 90 14800

Int. Cl.[5] C08F 4/656

U.S. Cl. 502—126 15 Claims

1. A cocatalyst for use in association with a catalytic component comprising a titanium compound and an internal electron donor on a magnesium halide support for the polymerization of propylene alone or propylene with ethylene or a C_4 or C_{12} alpha-olefin, said cocatalyst consisting essentially of an organic aluminum compound and an external electron donor consisting essentially of the combination of a hydrocarbyl monoether and/or a hydrocarbyl silane having a single Si—O—C bond with a non-aromatic saturated hydrocarbyl silane having two Si—O—C bonds.

5,192,733

OXYCHLORINATION CATALYSTS COMPRISING COPPER CHLORIDE SUPPORTED ON RARE-EARTH-MODIFIED ALUMINA, PROCESS FOR MAKING SUCH CATALYSTS, AND OXYCHLORINATION PROCESSES USING THEM

Eric L. Mainz, Colwich; William Q. Beard, Jr.; Robert P. Hirschmann, both of Wichita, all of Kans.; Barry M. Little, Castlewood, S. Dak., and Earl B. Smith, Newton, Kans., assignors to Vulcan Materials Company, Wichita, Kans.

Division of Ser. No. 533,513, Jun. 5, 1990, Pat. No. 5,113,027, which is a continuation-in-part of Ser. No. 451,303, Dec. 15, 1989, Pat. No. 5,004,849. This application Dec. 4, 1991, Ser. No. 802,190

Int. Cl.[5] B01J 21/04, 23/10, 27/10, 27/122

U.S. Cl. 502—225 11 Claims

1. A catalyst composition for use in the production of a chlorinated hydrocarbon product selected from the group consisting of perchloroethylene, trichloroethylene and mixture thereof from a less completely chlorinated precursor thereof by oxychlorination of said precursor in a fluidized bed of catalyst, which catalyst composition comprises (1) a catalyst support in microspheroidal form composed of at least 90 percent alumina and from 0.2 to 10 percent of a Lanthanide Oxide selected from the group consisting of the oxides of lanthanum, neodymium, praseodymium and yttrium and mixtures comprising at least two of said oxides, said Lanthanide Oxide being integrally incorporated in the alumina by heat treatment at a temperature of at least 800° C. and up to 1500° C., said support having an initial surface area in excess of 20 and less than 100 m^2/g, and (2) from 4 to 25 percent (based on said support) of a mixture of copper chloride and potassium chloride deposited on said support.

5,192,734

HYDROPROCESSING CATALYST COMPOSITION

John E. Creighton, Columbia, and Leo Rheaume, Hyattsville, both of Md., assignors to W. R. Grace & Co.- Conn., New York, N.Y.

Filed Oct. 25, 1991, Ser. No. 783,067

Int. Cl.[5] B01J 21/04, 23/85, 23/88

U.S. Cl. 502—314 5 Claims

1. A catalyst comprising alumina and catalytically effective amounts of a metal selected from the group consisting of a Group VIB metal and a Group VIII metal and mixture thereof, said catalyst having a surface area of greater than 330 m^2/g, a total pore volume above about 0.5 cc/g as determined by mercury porosimetry, and less than 0.25 cc/g pore volume in pores greater than 250 Å diameter.

5,192,735

PREPARATION OF LOW CHROMIUM ACTIVE CHARCOAL BY FREEZE DRYING IMPREGNATED CHARCOAL

Jack G. Pagotto, Kanata, and Septimus H. C. Liang, Ottawa, both of Canada, assignors to Minister of National Defence of Her Majesty's Canadian Government, Ottawa, Canada

Filed Feb. 20, 1992, Ser. No. 837,913

Claims priority, application Canada, Mar. 1, 1991, 2037438

Int. Cl.[5] B01J 23/20, 20/32; C01B 31/08; C01C 3/00

U.S. Cl. 502—417 10 Claims

1. A process for producing an activated carbon adsorbent having crystals of chromium VI uniformly distributed over the carbon surface, said process comprising the steps of:

(a) soaking charcoal in an impregnating solution of chromium VI;

(b) draining excess impregnating solution from the charcoal, and thereafter

(c) freeze-drying the thus impregnated charcoal to provide chromium VI crystals uniformly distributed over the carbon surface.

5,192,736

HEAT-SENSITIVE RECORDING MATERIALS

Kazuyuki Hanada; Iwao Misaizu; Masashi Saito; Katsutoshi Torii, and Katsumi Kuriyama, all of Tokyo, Japan, assignors to Dainichiseika Color & Chemicals Mfg. Co., Ltd. and Ukima Colour & Chemicals Mfg. Co., Ltd., both of Tokyo, Japan

Filed Dec. 24, 1991, Ser. No. 813,180

Claims priority, application Japan, Dec. 28, 1990, 2-415441

Int. Cl.[5] B41M 5/26

U.S. Cl. 503—226 10 Claims

1. In a heat-sensitive recording material comprising a base sheet material, a heat-sensitive recording layer provided on one side of the base sheet material and a heat-resistant layer provided on the other side of the base sheet material, the improvement wherein the heat-resistant layer is formed of a resin modified with a silane coupling agent, said silane coupling agent containing at least one free isocyanate group, and the

modified resin containing one or more hydrolyzable silyl groups in side chains of the molecule of the resin.

5,192,737

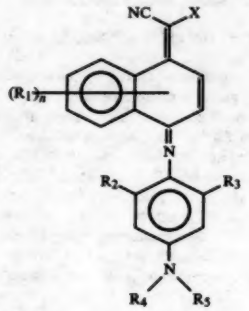
HEAT TRANSFER DYE-PROVIDING MATERIAL

Seiiti Kubodera, and Kozo Sato, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

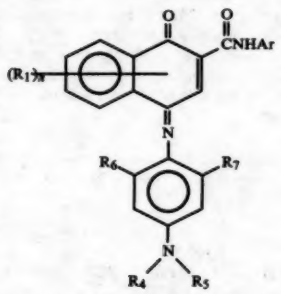
Filed Nov. 4, 1991, Ser. No. 787,611
Claims priority, application Japan, Nov. 6, 1990, 2-299007
Int. Cl.[5] B41M *5/035, 5/26*
U.S. Cl. 503—227 **13 Claims**

1. A thermal transfer dye-providing material comprising a support having provided thereon a layer containing a thermally migrating dye, wherein at least one of the dye-containing layer and a layer adjacent thereto contains an infrared-absorbing dye represented by Formula (I), (II) or (III):

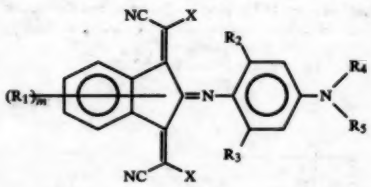
Formula (I)



Formula (II)



Formula (III)



wherein R_1 represents a halogen atom, an alkoxy group, an aryloxy group, an acylamino group, an alkoxycarbonylamino group, a sulfonylamino group, a sulfamoyl group, a hydroxyl group, a sulfonyl group, or a ureido group; n represents an integer of from 0 to 3, provided that R_1's may be the same or different when n is 2 or 3; m represents an integer of from 0 to 2, provided that R_1 may be the same or different when m is 2; R_2 and R_3 can be the same or different and independently represent a hydrogen atom, an alkyl group, an alkoxy group, a halogen atom, an acylamino group, an alkoxycarbonylamino group, or a ureido group; R_4 and R_5 can be the same or different and independently represent a hydrogen atom, an alkyl group, or an aryl group, provided that R_4 and R_5 may be combined with each other to form a ring and that R_4 and R_5 may be combined with a benzene ring to form a 5- or 6-membered nitrogen-containing heterocyclic group; R_6 and R_7 can be the same or different and independently represent an alkyl group, an alkoxy group, a halogen atom, an acylamino group, an alkoxycarbonylamino group, or a ureido group; X represents a cyano group, an acyl group, an alkoxycarbonylamino group, or a ureido group; Ar represents an aryl group or a heteroaryl group; provided that the above groups can be substituted with other groups and that, in Formulae (I) and (III), the CN and X groups which are bonded to the same carbon atom can change positions with each other.

5,192,738

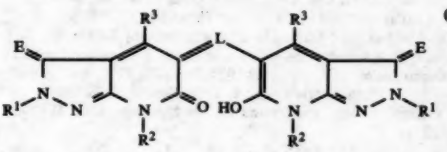
HEAT TRANSFER DYE-PROVIDING MATERIAL

Yoshio Inagaki, and Seiiti Kubodera, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 4, 1991, Ser. No. 787,609
Claims priority, application Japan, Nov. 5, 1990, 2-297165
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 **14 Claims**

1. A thermal transfer dye-providing material comprising a support having provided thereon a layer containing a thermally migrating dye, wherein at least one of the dye-containing layer and a layer adjacent thereto contains an infrared-absorbing dye represented by Formula (I):

(I)



wherein L represents a substituted or unsubstituted methine group, trimethine chain or pentamethine chain, which is formed by linking the methine groups with a conjugated double bond; E represents O, S or N—R^4; R^1 and R^4 can be substituted or unsubstituted and independently represent an alkyl group, an alkenyl group, an alkynyl group, an aryl group, a heterocyclic group, an amino group, a hydrazino group, or a diazenyl group, provided that R^1 and R^4 may be combined to form a ring; R^2 can be substituted or unsubstituted and represents a hydrogen atom, an alkyl group, an aryl group, an alkenyl group, an alkynyl group, or a heterocyclic group; and R^3 can be substituted or unsubstituted and represents a hydrogen atom, a halogen atom, a cyano atom, a nitro group, a hydroxy group, a carboxyl group or a salt thereof, an alkyl group, an aryl group, an alkenyl group, a heterocyclic group, an alkoxy group, an aryloxy group, an alkoxycarbonyl group, an aryloxycarbonyl group, an amino group, an acyloxy group, a carbamoyl group, a sulfamoyl group, an alkylthio group, an arylthio group, an alkylsulfonyl group, an arylsulfonyl group, or an alkynyl group.

5,192,739

METHOD OF FORMING A TAPE OF THE HIGH TEMPERATURE OXIDE SUPERCONDUCTORS

Kenneth W. Lay, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 28, 1991, Ser. No. 723,032
Int. Cl.[5] H01L *39/12*
U.S. Cl. 505—1 **3 Claims**

1. A method of forming a superconducting tape having a silver sheath and a polycrystalline oxide superconductor core, comprising:

forming at least one silver foil, having a length and a width dimension, to have a receiving surface extending along the length dimension for supporting a deposit, and at least one enclosing surface that can cover the deposit and overlap

another portion of the foil so that the surfaces form the sheath, the foil having a first thickness at the receiving surface and a second thickness at the enclosing surface;

forming a precursor deposit of the superconductor on the receiving surface;

wrapping the enclosing surface to cover the deposit and

overlap another portion of the foil to form the sheath, the first and second thicknesses being preselected so that the thickness of the overlapping foils is equivalent to the thickness of foil oppositely facing the overlapping foils;

urging the overlapping foils together to form a seal, and

reaction-sintering the precursor deposit to form the superconductor core.

5,192,740

COMPOSITIONS AND METHODS FOR IMPROVING COLD TOLERANCE IN ANIMALS AND HUMANS

Tze-Fun Lee, and Lawrence C. Wang, both of Edmonton, Canada, assignors to University of Alberta, Edmonton, Canada

Continuation of Ser. No. 287,974, Dec. 20, 1988, abandoned.
This application May 9, 1991, Ser. No. 700,320
Claims priority, application United Kingdom, Dec. 21, 1987, 8729714
Int. Cl.[5] A61K 37/00, 31/70, 31/715, 31/52
U.S. Cl. 514—2 38 Claims

1. A method of improving the cold tolerance of animals and humans which comprises administering to an animal or human in need thereof an orally ingestible composition consisting essentially of an adenosine receptor antagonist selected from the group of caffeine, theobromine, 8-phenyltheophylline, 8-cyclopentyltheophylline, 8-(4-(2-aminoethyl)amino carboxymethyloxyphenyl)-1,3-dipropylxanthine, 8-(amino-4-chlorophenyl)-1,3-dipropyl xanthine, and 8-(p-sulfophenyl)-1,3-dipropyl xanthine, alone or mixed with two or more thereof, or in combination with theophylline or aminophylline or both, and a nutritional supplement mixture of 47 to 66% by weight of carbohydrate, 15–50% by weight of protein and 0 to 25% by weight of fat, said composition administered in an amount sufficient to improve the cold tolerance of said animal or human.

5,192,741

SUSTAINED AND CONTROLLED RELEASE OF WATER INSOLUBLE POLYPEPTIDES

Piero Orsolini, Martigny; Rolland-Yves Mauvernay, and Romano Deghenghi, both of Lausanne, all of Switzerland, assignors to Debiopharm S.A., Lausanne, Switzerland

Filed Sep. 20, 1988, Ser. No. 247,060
Claims priority, application United Kingdom, Sep. 21, 1987, 8722134
Int. Cl.[5] A61K 37/26; C07K 7/40
U.S. Cl. 514—4 14 Claims

1. A process for preparing a pharmaceutical composition designed for sustained and controlled release of a peptide, said process comprising selecting a water-insoluble peptide salt; dispersing the water-insoluble peptide salt into a solution of a polylactide polymer, a polyglycolide polymer, a copolymer of lactic and glycolic acids, or a mixture of said polymers and a solvent; removing the solvent of the solution to form a residue; and shaping the residue into solid particles of said pharmaceutical composition suitable for administration by parenteral injection or as a subcutaneous implant.

5,192,742

COMPOUNDS AND COMPOSITIONS FOR THE TREATMENT OF BACTERIAL INFECTIONS IN ANIMALS

Nigel J. Coates; Rachel Sykes; Davis Christopher J., and Lawrence M. Curtis, all of Betchworth, England, assignors to Beecham Group PLC, England

Continuation of Ser. No. 454,708, Dec. 21, 1989, abandoned.
This application Dec. 18, 1991, Ser. No. 809,845
Claims priority, application United Kingdom, Dec. 23, 1989, 8830225
Int. Cl.[5] A61K 37/02, 35/74; C07K 7/54, 9/00
U.S. Cl. 514—8 11 Claims

2. A substance or compound obtained by fermentation of a microorganism of the genus Amycolatopsis NCIB 40089 accession number comprised of compounds having a molecular weight of 2190±1 and 2204±1 and having antibiotic activity measured in MIC μg/ml against *Bacillus subtilis* ATCC 6633 of 16.0, *Corynebacterium xerosis* NCTC 9755 of 16.0, *Sarcina lutea* NCTC 8340 of 16.0, *Staphylococcus aureus* "Oxford" of 32.0, *Staphylococcus aureus* "Russell" of 64.0, *Staphylococcus aureus* "V573" MR of 16.0, *Staphylococcus saprophyticus* "FLI" of 64.0, *Staphylococcus epidermidis* 60137 of 16.0, *Streptococcus pyrogenes* CN10 of 4.0, *Streptococcus agalactiae* "Hester" of 8.0, *Streptococcus sanguis* ATCC 10556 of 16.0, *Streptococcus pneumoniae* Pu7 of 8.0 and *Streptococcus faecalis* 1 of 32.0, wherein said *Staphylococcus aureus* "V573" MR is resistant to methicillin, tetracycline, erythromycin and gentamycin.

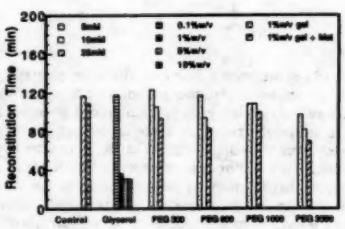
11. A method of treating bacterial infections in animals, which comprises administering an antibacterially effective amount of a substance or compound according to claim 2 to an animal in need thereof.

5,192,743

RECONSTITUTABLE LYOPHILIZED PROTEIN FORMULATION

Chung C. Hsu, Los Altos Hills; Hoc M. Nguyen, San Francisco, and Sylvia S. Wu, San Ramon, all of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Filed Jan. 16, 1992, Ser. No. 821,206
Int. Cl.[5] A61K 37/02
U.S. Cl. 514—8 13 Claims



1. A formulation comprising tissue factor, glycerol, and a water-soluble etherified cellulose in an amount that upon reconstitution of the mixture will form a topical gel.

5,192,744

METHOD OF INHIBITING ANGIOGENESIS OF TUMORS

Noel P. Bouck, Oak Park; Peter J. Polverini, Evanston; Deborah J. Good, Chicago, all of Ill., and Farzan Rastinejad, Los Altos, Calif., assignors to Northwestern University, Evanston, Ill.

Filed Jan. 12, 1990, Ser. No. 464,369
Int. Cl.[5] A61K 37/02; C07K 15/06, 15/14
U.S. Cl. 514—8 24 Claims

1. A method of inhibiting angiogenesis in a human patient, comprising administering to the patient a vascularization inhibitor comprising substantially pure human thrombospondin in trimer or monomer form, or a substantially pure fragment thereof capable of inhibiting vascularization.

5,192,745

CYCLIC ANTICOAGULANT PEPTIDES

John L. Krstenansky, Cincinnati, and Simon J. T. Mao, Loveland, both of Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Continuation of Ser. No. 405,106, Sep. 8, 1989, abandoned, which is a continuation-in-part of Ser. No. 53,204, May 21, 1987, abandoned. This application Sep. 23, 1991, Ser. No. 764,989
Int. Cl.[5] A61K 37/02; C07K 7/06, 7/08
U.S. Cl. 514—9 8 Claims

1. A peptide derivative of the formula

wherein

X is an amino terminal residue selected from hydrogen, one or two alkyl groups of from 1 to 6 carbon atoms, one or two acyl groups of from 2 to 10 carbon atoms, carbobenzyloxy, and t-butyloxycarbonyl;

A_1 is Gly-Asp, or a bond;

A_2 is Phe or Tyr;

A_3 is Glu;

A_4 is Glu;

A_5 is Ile;

A_7 is Glu;

A_8 is Glu;

A_{10} is Leu;

A_{11} is Gln;

Y is a carboxy terminal residue selected from OH, (C_1–C_6)alkoxy, amino, mono- or di-(C_1–C_4)alkyl substituted amino, and benzylamino;

R, R', R_1, and R_1' are each selected from a hydrogen, and (C_1–C_4)alkyl group;

B is -S-S-; and

Alk_1 and Alk_2 are each selected from a (C_1–C_8)methylene group; and wherein "D" and "L" indicate that the stereochemistry of the indicated carbon of attachment of said Alk_1 and Alk_2 when said Alk_1 and Alk_2 correspond to the amino acid side chains of D-cysteine and L-cysteine, respectively, or a pharmaceutically acceptable salt thereof.

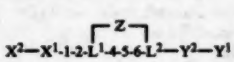
5,192,746

CYCLIC CELL ADHESION MODULATION COMPOUNDS

Thomas J. Lobl, Encinitas; Shiu-Lan Chiang, and Pina M. Cardarelli, both of San Diego, all of Calif., assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed Jul. 9, 1990, Ser. No. 550,330
Int. Cl.[5] A61K 37/02; C07K 5/00, 7/00, 15/00
U.S. Cl. 514—11 15 Claims

1. A compound of the formula



and pharmaceutically acceptable salts thereof, wherein

L^1 and L^2 are each, or are together, a residue of an amino acid, an amino acid analog or an amino acid mimetic having a functional group suitable for the formation of a cyclizing bridge between L^1 and L^2;

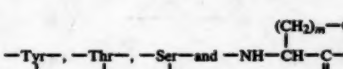
Z is a cyclizing moiety or bond between L^1 and L^2;

1 is optional and, where present, is selected from the group consisting of Leu, Sar, D-Nal, Tyr, Phe, Ile, Pro, Gly, Ala, Val, norLeu, norVal, β-Ala, Trp, and (Ada -Ala;

2 is selected from the group consisting of Arg, homoArg and norArg.

4 is selected from Asp and, where 2 is norArg, Glu.

5 is optional and, where present, is selected from the group consisting of Ser, Thr, Tyr, Trp, Ala, Val, Phe



wherein m is 2, 3 or 4;

6 is optional and, where present, is selected from the group consisting Pro, 3-thioPro, 1,1-ACC, Dhp, Hyp, homoPro and Phe;

X^1 and Y^1 are each optional and, where present, are independently selected from sequences of 1 to 4 D- or L-amino acids or amino acid analogs;

X^2 is an optional N^{α}-substituent selected from R'-(including hydrogen) and R'CO—; and

Y^2 is an optional carboxyl terminal substituent selected from the group consisting of —OR' (including hydroxy), —NR'_2 (including —NH_2 and —NHR'), —$NHNH_2$ and —SR';

and wherein each R' is individually a pharmaceutically suitable substituent group, preferably one selected from the group consisting of hydrogen, linear and branched, unsubstituted and substituted C_1–C_8 lower alkyls, C_2–C_8 alkenyls, C_2–C_8 alkenyls, C_2–C_8 alkynyls, C_6–C_{14} aryls, C_7–C_{14} alkaryls, C_7–C_{14} alkaryls and C_3–C_{14} cycloalkyls, and, in the case of —NR'_2, from cyclized groups forming (in an attachment with the nitrogen atom) a 5–8 membered heterocyclic ring optionally containing oxygen, nitrogen or sulfur as a further ring heteroatom.

5,192,747

ANTICOAGULANT PEPTIDES

John L. Krstenansky, Cincinnati, Ohio, assignor to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Continuation of Ser. No. 416,336, Oct. 3, 1989, abandoned. This application Dec. 3, 1991, Ser. No. 803,666
Int. Cl.[5] A61K 37/00, 37/02; C07K 5/00, 7/00
U.S. Cl. 514—15 34 Claims

1. A peptide derivative of the formula

wherein;

X is an amino terminal substituent selected from hydrogen, one or two alkyl groups of from 1 to 10 carbon atoms, one or two acyl groups of from 2 to 10 carbon atoms, carbobenzyloxy or t-butyloxy carbonyl;

A_1 is a sequence of Gly-Asp, 1–11 amino acids of hirudin or natural variants of hirudin, or a bond;

A_2 is a bond or is Phe, SubPhe, pChloroPhe, D-Phe, NMePhe, Pgl, Tha, His, Cin, Nap, Leu, Gln, 3,4-dihydroCin, β-(2- and 3-thienyl)alanine, β-(2-and 3-furanyl)alanine, β-(2-, 3-, and 4-pyridyl)alanine, β-(benzothienyl-2- and 3-)alanine, β-(1- and 2-naphthyl)alanine, Tyr or Trp;

A_3 is a bond, Glu, or Asp;

A_4 is a bond, Pro, or Glu;

A_5 is a bond, or Ile;

A_6 is a bond, [Tiq,]Pro, Hyp, 3,4-dihydroPro, thiazolidine-4-carboxylate, Sar, NMePgl, Azt, Pip;

A_7 is a bond, Glu, or asp;

A_8 is a bond, Glu, Asp, or Ala;

A_9 is a bond, or is a Tyr, I-Tyr, D-Tyr, Trp, Phe, Leu, Nle, Ile, Val, Ala, Cha or Pro or is a dipeptide containing at least one of these amino acids;

A_{10} is a sequence of 1–11 amino acids of hirudin or natural variants of hirudin, D-Glu, Glu, Gln, Asn, or a bond;

Y is a carboxy terminal substituent selected from OH, (C_1–C_8) alkoxy, amino, mono di (C_1–C_4) alkyl substituted amino acids, or is an alcohol terminal residue; and where at least one of the positions in A_3 through A_9 is a bond.

5,192,748

ANTIBIOTICS UNPHENELFAMYCIN AND PHENELFAMYCINS A-D

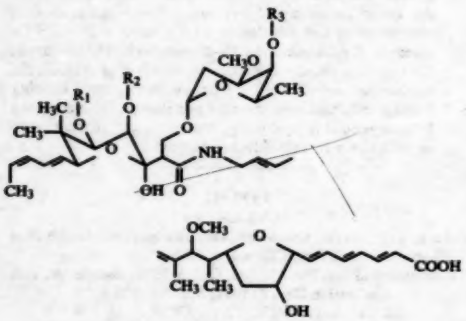
Jill E. Hochlowski, Green Oaks; Mark H. Buytendorp, Cary; Randal H. Chen, Buffalo Grove; James B. McAlpine, Libertyville, all of Ill.; Robert J. Theriault, Kenosha, Wis.; Marianna Jackson, Waukegan, and James P. Karwowski, Mundelein, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation-in-part of Ser. No. 160,614, Feb. 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 104,902, Oct. 6, 1987, abandoned. This application Aug. 5, 1991, Ser. No. 740,827

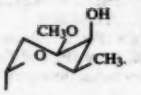
Int. Cl.[5] A61K *31/71*; C07H *15/00*

U.S. Cl. 514—25 **12 Claims**

1. A compound of the formula:



or a pharmaceutically acceptable salt thereof, wherein R_1 and R_2 are independently selected from the group consisting of hydrogen and $—C(O)CH_2C_6H_5$, with the proviso that at least one of R_2 and R_2 is hydrogen, and R_3 is selected from the group consisting of hydrogen and



8. A method of increasing the growth rate and feed efficiency of animals comprising administering to said animals an effective amount of a compound of claim 1.

5,192,749

4'-SUBSTITUTED NUCLEOSIDES

Counde O-Yang, Sunnyvale; Keith A. M. Walker, Los Altos Hills; Walter Kurz, Mountain View, and Helen Y. Wu, San Jose, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed May 21, 1990, Ser. No. 526,485

Int. Cl.[5] A61K *31/70*; C07H *17/00, 15/12*

U.S. Cl. 514—45 **31 Claims**

1. A compound of the formula

I

wherein:

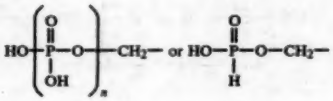
B is a purine or a pyrimidine;

X and X' are H;

Y is H;

Y, is OH or H; or Y' and X' together makes a bond;

Z is



where n is zero, one, two or three;

or Y' and Z together form a cyclic phosphate ester;

Z' is —CN, $—CH_3$, $—CH_2N_3$ or $—CH_2J$, where J is a halogen atom;

or Z' and Y' together are $—CH_2O—$;

and pharmaceutically acceptable esters, ethers, amides, N-acyl moieties and salts thereof.

5,192,750

METHOD AND COMPOSITION FOR TREATMENT OF FOOD ALLERGY

Albert F. Burton, Comox, and Stephen Gislason, Vancouver, both of Canada, assignors to The University of British Columbia, Vancouver, Canada

Filed Jan. 28, 1992, Ser. No. 826,763

Int. Cl.[5] A61K *31/70*

U.S. Cl. 514—62 **7 Claims**

1. A method of alleviating food sensitivity and food allergy in a human being suffering from food intolerance or food allergy comprising feeding said human being a therapeutically effective amount of N-acetyl glucosamine as required to alleviate food sensitivity or food allergy in said human being.

5,192,751

USE OF COMPETITIVE NMDA RECEPTOR ANTAGONISTS IN THE TREATMENT OF URINARY INCONTINENCE

Karl B. Thor, Carmel, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Jul. 24, 1992, Ser. No. 919,480
Int. Cl.[5] A61K *31/47, 31/675*
U.S. Cl. 514—82 15 Claims

1. A method of treating motor urge urinary incontinence in mammals which comprises administering to a mammal in need of treatment therefor an effective amount of a competitive NMDA antagonist.

5,192,752

SWALLOWABLE PHARMACEUTICAL COMPOSITIONS CONTAINING COLLOIDAL BISMUTH SUBCITRATE

Francis B. Chapura, Hamilton, and Sekhar Mitra, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jan. 14, 1991, Ser. No. 640,920
The portion of the term of this patent subsequent to Jul. 7, 2009, has been disclaimed.
Int. Cl.[5] A61K *31/65, 31/43, 31/545, 31/415, 31/29*
U.S. Cl. 514—152 22 Claims

1. An oral pharmaceutical composition in solid unit dosage form suitable for swallowing comprising a safe and effective amount of solid colloidal bismuth subcitrate and, optionally, pharmaceutically-acceptable carrier materials, wherein the packing density of the pharmaceutical composition is less than about 1 g/ml.

5,192,753

ANTI-RHEUMATOID ARTHRITIC DRUGS IN THE TREATMENT OF DEMENTIA

Patrick L. McGeer, 4727 West 2nd Ave., Vancouver, B. C., Canada V6T 1C1 ; Joseph Rogers, 7646 W. Julie Dr., Glendale, Ariz. 85308; John Sibley, 87 Leddy Crescent, Saskatoon, Saskatchewan, Canada S7H 3Y9 , and Edith McGeer, 4727 West 2nd Ave., Vancouver, B. C., Canada V6T 1C1

Filed Apr. 23, 1991, Ser. No. 689,499
Int. Cl.[5] A61K *31/60, 31/615, 31/54, 31/44, 31/425, 31/42, 31/415, 31/40, 31/38, 31/195, 31/19*
U.S. Cl. 514—159 6 Claims

1. A method of treating dementia in a human being in need thereof which comprises administering to said human being on a daily basis a sufficient amount of a non-steroidal anti-inflammatory drug to inhibit prostoglandin synthesis in vivo but insufficient to induce unwanted side effects in said human.

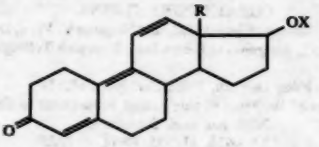
5,192,754

FISH STRESS RESISTANCE METHOD

Saburo Kubota, Akishima, Japan, assignor to Roussel Uclaf, Paris, France

Filed Feb. 11, 1992, Ser. No. 833,768
Claims priority, application Japan, Feb. 13, 1991, 3-40648
Int. Cl.[5] A61K *31/56*
U.S. Cl. 514—170 6 Claims

1. A method of relieving stress in fish and increasing resistance to pathogenic agents selected from the group consisting of fungi, viruses and bacteria comprising orally administering daily to the fish an amount of 0.1 to 0.5 mg of a compound of the formula



I

wherein R is alkyl of 1 to 4 carbon atoms and X is acyl of an organic carboxylic acid of 1 to 18 carbon atoms per kg of fish body weight sufficient to relieve stress and increase resistance to fungi, viruses and bacteria.

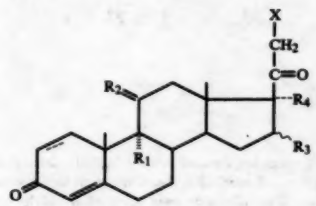
5,192,755

PREGNANE DERIVATIVES AS IMMUNOMODULATORS

Robert T. Logan, Lanark, Scotland, and Gilbert F. Woods, Beaumaris, Wales, assignors to Akzo N.V., Arnhem, Netherlands

Continuation of Ser. No. 3,107, Jan. 14, 1987, abandoned. This application May 17, 1990, Ser. No. 525,299
Claims priority, application United Kingdom, Jan. 15, 1986, 8600879
Int. Cl.[5] A61K *31/56*
U.S. Cl. 514—180 24 Claims

1. A method of supporting the cellular immune system comprising administering a pharmaceutical composition having the formula:



wherein
X=F, Cl or Br;
R_1=F or Cl;
R_2=H(βOH) or O;
R_3=alkyl (1–4 C);
R_4=alkyl (1–4 C); and
the dotted line indicates the presence of a single or a double bond in 1,2-position,
and a pharmaceutically acceptable non-toxic carrier, in an effective amount to suppress the cellular immune system.

5,192,756

AMINOSTEROL ANTIBIOTIC

Michael Zasloff, Merion; Karen Moore, Lansdowne, and Suzanne Wehrli, Bala Cynwyd, all of Pa., assignors to The Children's Hospital of Pennsylvania, Philadelphia, Pa.

Filed Mar. 18, 1992, Ser. No. 853,634
Int. Cl.[5] A61K *31/56;* C07J *41/00*
U.S. Cl. 514—182 4 Claims

1. A substantially homogeneous composition of the compound 3β(N-[3-aminopropyl]-1,4-butanediamine)- 7α,24[-dihydroxy-5α-cholestane 24-sulfate.

4. A method of treating microbial infections in human or non-human animals comprising administering to said animal an effective antibiotic amount of the compound 3β(N-[3-aminopropyl]-1,4-butanediamine)-7α,24[-dihydroxy-5α-cholestane 24-sulfate or a pharmaceutically acceptable salt thereof.

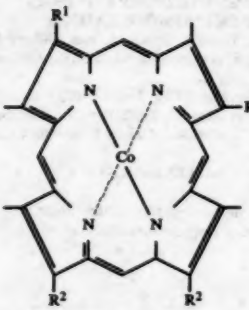
5,192,757

COBALT PORPHYRINS

Michael R. Johnson, Chapel Hill, and Stephen V. Frye, Durham, both of N.C., assignors to Glaxo Inc., Research Triangle Park, N.C.

Filed Dec. 20, 1990, Ser. No. 631,129
The portion of the term of this patent subsequent to Sep. 22, 2009, has been disclaimed.
Int. Cl.[5] A61K *31/555*; C07D *487/22*
U.S. Cl. 514—185 **14 Claims**

1. A cobalt porphyrin of the following formula (I):



(I)

or a salt or complex thereof with a ligand wherein the cobalt atom is in the +2 oxidation state, wherein said ligand is up to 2 molecules of an aromatic base selected from the group consisting of pyridine, imidazole or 2-methyl-imidazole and wherein:

R^1 is $—(CH_2)_n—X^1$;

n is 0, 1, 2 or 3;

X^1 is hydrogen, —COOH, $—CONHSO_2X^2$, $—CONHCOX^2$ or tetrazole which is unsubstituted or alkyl-substituted;

X^2 is alkyl, phenyl or phenyl independently substituted by one or more of halogen, alkoxy, nitro, alkyl, hydroxy, amino and mono- and dialkyl substituted amino;

R^2 is independently a value of R^1, provided that i) in one of R^1 and R^2, X^1 is other than hydrogen, ii) n is not 0 when X^1 is tetrazole and iii) R^1 is not H, $—CH_2CH_3$ or $—CH_2CH_2COOH$ when R^2 is $—CH_2CH_2COOH$.

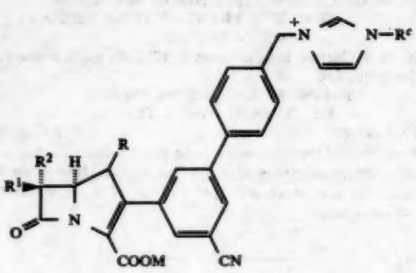
5,192,758

2-BIPHENYL-CARBAPENEM ANTIBACTERIAL AGENTS

Frank DiNinno, Old Bridge; Kevin D. Dykstra, Hewitt, and James V. Heck, Scotch Plains, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Feb. 28, 1992, Ser. No. 843,139
Int. Cl.[5] A01N *43/00*; A61K *31/395*; C07D *487/00*
U.S. Cl. 514—210 **14 Claims**

1. Carbapenem compounds of the formula:



(I)

wherein:

R is H or CH_3;

R^1 and R^2 are independently H, $CH_3—$, $CH_3CH_2—$, $(CH_3)_2CH—$, $HOCH_2—$, $CH_3CH(OH)—$, $(CH_3)_2C(OH)—$, $FCH_2CH(OH)—$, $F_2CHCH(OH)—$, $F_3CCH(OH)—$, $CH_3CH(F)—$, $CH_3CF_2—$, or $(CH_3)_2C(F)—$;

R^c is selected from the group consisting of $—CF_3$, and C_{1-6} alkyl where the C_{1-6} alkyl may be mono-substituted with a substituent selected from the group consisting of:

a) a trifluoromethyl group: $—CF_3$;

b) a halogen atom: —Br, —Cl, —F, or —I;

c) C_1–C_4 alkoxy radical: $—OC_{1-4}$ alkyl, wherein the alkyl is optionally mono-substituted by R^q, where

R^q is a member selected from the group consisting of —OH, $—OCH_3$, —CN, $—C(O)NH_2$, $—OC(O)NH_2$, CHO, $—OC(O)N(CH_3)_2$, $—SO_2NH_2$, $—SO_2N(CH_3)_2$, $—SOCH_3$, $—SO_2CH_3$, —F, $—CF_3$ and $—COOC_{1-4}$alkyl;

d) a hydroxy group: —OH;

e) a carbonyloxy radical: $—O(C=O)R^z$, where

R^z is C_{1-4} alkyl or phenyl, each of which is optionally mono-substituted by R^q as defined above;

f) a carbamoyloxy radical; $—O(C=O)N(R^y)R^z$ where

R^y and R^z are independently H, C_{1-4} alkyl (optionally mono-substituted by R^q as defined above), together a 3- to 5-membered alkylidene radical to form a ring (optionally substituted with R^q as defined above) or together a 2- to 4-membered alkylidene radical, interrupted by —O—, —S—, —S(O)— or $—S(O)_2—$, to form a ring (where the ring is optionally mono-substituted with R^q as defined above);

g) a sulfur radical: $—S(O)_n—R^z$ where n=0–2, and R^z is defined above;

h) a sulfamoyl group: $—SO_2N(R^y)R^z$ where R^y and R^z are as defined above;

i) azido; N_3

j) a formamido group: $—N(R^y)(C=O)H$, where

R^y is H or C_{1-4} alkyl, and the alkyl thereof is optionally mono-substituted by R^q as defined above;

k) a (C_1–C_4 alkyl)carbonylamino radical: $—N(R^y)(C=O)C_{1-4}$ alkyl, where R^y is as defined above, and the alkyl group is also optionally mono-substituted by R^q as defined above;

l) a (C_1–C_4 alkoxy) carbonylamino radical: $—N(R^y)(C=O)OC_{1-4}$ alkyl, where R^y is as defined above, and the alkyl group is also optionally mono-substituted by R^q as defined above;

m) a ureido group: $—N(R^y)(C=O)N(R^y)R^z$ where R^y, R^y and R^z are as defined above;

n) a sulfonamido group: $—N(R^y)SO_2R^z$, where R^z and R^y are as defined above;

o) a cyano group: —CN;

p) a formyl or acetalized formyl radical; $—(C=O)H$ or $—CH(OCH_3)_2$;

q) (C_1–C_4 alkyl)carbonyl radical wherein the carbonyl is acetalized: $—C(OCH_3)_2C_{1-4}$ alkyl, where the alkyl is optionally mono-substituted by R^q as defined above;

r) carbonyl radical: —(C=O)R^z, where R^z is as defined above;

s) a hydroximinomethyl radical in which the oxygen or carbon atom is optionally substituted by a C_1–C_4 alkyl group: —(C=NOR^y)R^y where R^y and R^z are as defined above, except they may not be joined together to form a ring;

t) a (C_1–C_4 alkoxy)carbonyl radical: —(C=O)OC_1–C_4 alkyl, where the alkyl is optionally mono-substituted by R^q as defined above;

u) a carbamoyl radical: —(C=O)N(R^y)R^z where R^y and R^z are as defined above;

v) an N-hydroxycarbamoyl or N(C_1–C_4 alkoxy)carbamoyl radical in which the nitrogen atom may be additionally substituted by a C_1–C_4 alkyl group; —(C=O)—N(OR^y)R^z where R^y and R^z are as defined above, except they may not be joined together to form a ring;

w) a thiocarbamoyl group: —(C=S)N(R^y)(R^z) where R^y and R^z are as defined above;

x) thiocyanate: —SCN;

y) trifluoromethylthio: —SCF_3;

z) C_5–C_7 cycloalkyl group in which one of the carbon atoms in the ring is replaced by a heteroatom selected from O, S, NH or N(C_1–C_4 alkyl) and in which one additional carbon atom may be replaced by NH or N(C_1–C_4 alkyl), and in which at least one carbon atom adjacent to each nitrogen heteroatom has both of its attached hydrogen atoms replaced by one oxygen thus forming a carbonyl moiety and there are one or two carbonyl moieties present in the ring;

aa) C_2–C_4 alkenyl radical;

ab) C_2–C_4 alkenyl radical;

ac) C_2–C_4 alkynyl radical;

ad) a 2-oxazolidinonyl moiety in which the point of attachment is the nitrogen atom of the oxazolidinone ring, the ring oxygen atom is optionally replaced by a heteroatom selected from —S— and >NR^t (where R^t is as defined above) and one of the saturated carbon atoms of the oxazolidinone ring is optionally mono-substituted by one of the substituents a) to ac) above;

M is selected from:

i) hydrogen;

ii) a pharmaceutically acceptable esterifying group or removable carboxyl protecting group;

iii) an alkali metal or other pharmaceutically acceptable cation; or

iv) a negative charge.

5,192,759

DERIVATIVES OF 1,2,3,4-TETRAHYDRONAPHTYLAMINE ENDOWED WITH NOOTROPIC ACTIVITY AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

Fabio Giannessi; Orlando Ghirardi; Domenico Misiti; Maria O. Tinti, and Roberto Cozzolino, all of Rome, Italy, assignors to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A., Rome, Italy

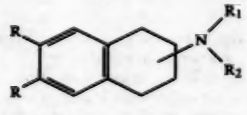
Filed Dec. 18, 1991, Ser. No. 809,874

Claims priority, application Italy, Dec. 21, 1990, 48605 A/90

Int. Cl.[5] C07D *223/10*; A61K *31/55*

U.S. Cl. 514—212 **4 Claims**

1. 1,2,3,4-tetrahydronaphtylamine of formula (I)



wherein

R is H OCH_3;

is either at 1 or 2 position

R_1 is H;

R_2 is selected from:

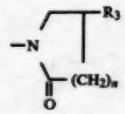
L-prolyl, optionally N-substituted with acetyl or carbobenzoxy,

L-pyroglutamyl,

(pyrrolidin-2-one-1-yl)acetyl,

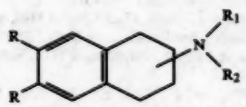
3-carboxy-2-hydroxypropyl;

or R_1 and R_2 taken together with the nitrogen atom form the ring



wherein n=1,2,3 and R_3=H, OH.

3. An orally or parenterally administrable pharmaceutical composition for enhancing the processes of learning and memory which comprises, as active ingredient, a 1,2,3,4-tetrahydronaphtylamine of formula (I)



(I)

wherein

R is H or OCH_3;

is either at 1 or 2 position

R_1 is H;

R_2 is selected from:

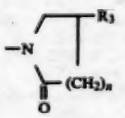
L-prolyl, optionally N-substituted with acetyl or carbobenzoxy,

L-pyroglutamyl,

(pyrrolidin-2-one-1-yl)acetyl,

3-carboxy-2-hydroxypropyl;

or R_1 and R_2 taken together with the nitrogen atom form the ring



wherein n=1,2,3 and R_3=H, OH.

5,192,760

3-CARBALKOXYAMINO-5-(ALPHA-AMINOPROPIONYL)-5H-DIBENZ[B,F]AZEPINES AND METHOD FOR THEIR MAKING

Helmut Wunderlich, Dresden; Andreas Stark, Radebeul; Dieter Lohmann, Radebeul; Lothar Zenker, Radebeul; Resi Bartsch; Hildegard Poppe, both of Dresden, all of German Democratic Rep.; Aleksandr P. Skoldinov, Moskau, U.S.S.R.; Natalja V. Kaverina, Moskau, U.S.S.R.; Anna N. Grizenko, Moskau, U.S.S.R.; Valentin V. Lyskovzev, Moskau, U.S.S.R., and Ekaterina K. Grigoreva, Moskau, U.S.S.R., assignors to Arzneimittelwerk Dresden GmbH, Radebeul, German Democratic Rep.

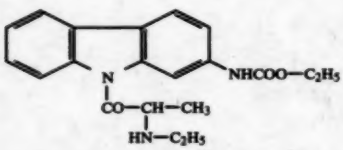
Filed Jun. 29, 1990, Ser. No. 546,375

Claims priority, application German Democratic Rep., Jun. 30, 1989, 330175-3

Int. Cl.[5] A61K *31/55*; C07D *223/18*

U.S. Cl. 514—217 2 Claims

1. A compound of the formula



and its pharmaceutically acceptable acid addition salts.

5,192,761

1,2,4-TRIAZOLIDINE-3,5-DIONES AND 1,3,5-TRIAZINE-2,4(1-H,3H)-DIONES, PHARMACEUTICAL COMPOSITIONS

Robert A. Izydore, Durham, and Iris H. Hall, Chapel Hill, both of N.C., assignors to North Carolina Central Univ., Durham and University of North at Chapel Hill, Chapel Hill, both of N.C.

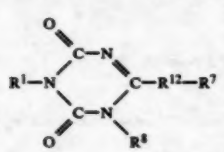
Division of Ser. No. 224,680, Jul. 27, 1988, Pat. No. 5,034,528. This application Nov. 6, 1990, Ser. No. 609,750

The portion of the term of this patent subsequent to Sep. 12, 2006, has been disclaimed.

Int. Cl.[5] A61K *31/53*, *31/41*

U.S. Cl. 514—241 5 Claims

1. A pharmaceutical composition for controlling hyperlipidemia in mammals comprising of a hypolipidemically effective amount of a compound having the structure:



IV

wherein R^1 is hydrogen, a C_1 to C_{10} alkyl or substituted alkyl, a C_2 to C_{10} alkenyl or substituted alkenyl, a C_2 to C_{10} alkynyl or substituted alkynyl, a C_4 to C_{10} cycloalkyl or substituted cycloalkyl, a C_4 to C_{10} cycloalkenyl or substituted cycloalkenyl, aryl, substituted aryl, cyano, phenalkyl, —CO—R^9, or Y—CO—R^9;

R^7 is hydrogen, a C_1 to C_{10} alkyl or substituted alkyl, a C_4 to C_{10} cycloalkyl or substituted cycloalkyl, aryl or substituted aryl, aralkyl, aroxy or substituted aroxy, a C_1 to C_5 alkoxy or substituted alkoxy, —Y—CO—R^9, or —$NR^{10}R^{11}$;

R^8 is hydrogen, a C_1 to C_5 alkyl, a C_4 to C_{10} cycloalkyl, —CO—R^9, or —Y—CO—R^9;

R^9 is hydrogen, a C_1 to C_{10} alkyl or substituted alkyl, aryl or substituted aryl;

R^{10} and R^{11} can be the same or different and each has the same meaning as R^9

R^{12} is —CO, —CS

Y is a C_1 to C_{10} alkylene or substituted alkylene;

with the proviso that when R^8 is hydrogen and R^7 is ethoxy, R^1 is not phenyl, methoxyphenyl, chlorophenyl, or n-butyl;

in combination with a pharmaceutically acceptable carrier.

5,192,762

USE OF BRIDGED TRICYCLIC AMINE DERIVATIVES AS ANTI-ISCHEMIC AGENTS

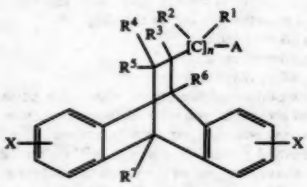
Nancy M. Gray, 261 DeSimone Dr., Marlborough, Mass., and Patricia C. Contreras, 300 E. Evans, Apt. L143, West Chester, Pa. 19380

Division of Ser. No. 428,531, Oct. 30, 1989, Pat. No. 5,055,468. This application Aug. 14, 1991, Ser. No. 745,027

Int. Cl.[5] A61K *31/50*, *31/495*

U.S. Cl. 514—249 9 Claims

1. A method for treating a patient afflicted by or susceptible to a neurodegenerative disorder or neurotoxic injury, said method comprising administering a therapeutically-effective amount of compound of the formula



(I)

wherein A is a group selected from

wherein each of R^1 and R^2 is independently selected from hydrido, alkyl, cycloalkyl, cycloalkylalkyl, aralkyl, aryl, hydroxyalkyl, alkoxyalkyl and halo; wherein R^1 and R^2 may be taken together to form oxo; wherein each of R^3 through R^7 is independently selected from hydrido, alkyl, hydroxy, cycloalkyl, cycloalkylalkyl, aralkyl, aryl alkoxy, alkoxyalkyl, aryloxy, aralkoxy, hydroxyalkyl, halo and haloalkyl; wherein R^4 and R^5 may be taken together to form oxo; wherein n is a number selected from zero to five, inclusive; wherein each X is independently one or more groups selected from hydrido, hydroxy, alkyl, cycloalkyl, cycloalkylalkyl, aralkyl, aryl, alkoxy, aralkoxy, aryloxy, alkoxyalkyl, haloalkyl, hydroxyalkyl, halo, cyano, amino, monoalkylamino, dialkylamino, nitro, carboxy, carboxylalkyl and alkanoyl; wherein each of R^{14} through R^{17} is independently selected from hydrido, alkyl, cycloalkyl, cycloalkylalkyl, aralkyl, aryl, alkoxyalkyl, hydroxyalkyl and halo; wherein R^{14} and R^{15} may be taken together to form oxo; wherein R^{16} and R^{17} may be taken together to form oxo; wherein each of r and t is a number independently selected from one to four, inclusive; wherein G is selected to form a heterocyclic ring containing one or more groups independently selected from

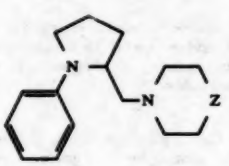
wherein each of R^{19} through R^{22} is independently selected from hydrido, hydroxy, alkyl, cycloalkyl, cycloalkylalkyl, aralkyl, aryl, alkoxy, aralkoxy, aryloxy, alkoxyalkyl, haloalkyl, hydroxyalkyl, halo, cyano, amino, monoalkylamino, dialkylamino, carboxy, carboxyalkyl and alkanoyl; or a pharmaceutically-acceptable salt thereof.

5,192,763
[(1-ARYLPYRROLIDIN-2-YL)METHYL]PIPERAZINE DERIVATIVES, THEIR PREPARATION AND THEIR APPLICATION IN THERAPEUTICS

Pascal George, St. Arnoult en Yvelines; Jacques Menin, Vitry sur Seine; Jean-Pierre Merly, Sceaux; Dennis Bigg, Castres; Daniel Obltz, Antony; Michel Peynot, L'Hay-les-Roses, and Corinne Veronique, Villejuif, all of France, assignors to Synthelabo, Paris, France

Filed Jun. 6, 1991, Ser. No. 710,711
Claims priority, application France, Jun. 7, 1990, 90 07067
Int. Cl.[5] H61K *31/495;* **C07D** *403/06*
U.S. Cl. 514—252 **8 Claims**

1. piperazine compounds in the form of racemates or enantiomers, which compounds correspond to the formula:



(I)

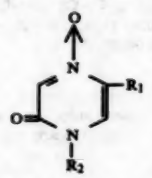
in which Z represents a group of formula -N-R_1 in which R_1 is hydrogen, C_{1-3} alkyl, a group of formula Ar—C_nH_{2n}— in which n is 0, 1 or 2 and Ar represents a phenyl group optionally substituted by one or more halogen atoms and/or C_{1-3} alkyl or C_{1-3} alkyl or C_{1-3} alkoxy group, or a group of formula —COR_2 in which R_2 represents —CH_3, —C_6H_5, —$CH_2C_6H_5$ or —OC_2H_5, or their pharmaceutically acceptable acid addition salts.

5,192,764
PYRAZINONE N-OXIDE NUCLEOSIDES AND ANALOGS THEREOF

Yung-Chi Cheng, Woodbridge; Tai-Shun Lin, North Haven, both of Conn., and Thomas J. Bardos, Snyder, N.Y., assignors to Research Foundation of State of N.Y., Albany, N.Y. and Yale University, New Haven, Conn.

Filed May 30, 1991, Ser. No. 707,536
Int. Cl.[5] A61K *31/495;* **C07D** *241/02*
U.S. Cl. 514—252 **46 Claims**

1. A compound according to the structure:

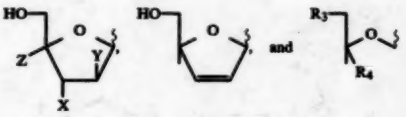


where

R_1 is H, CH_3, C_2H_5, C_3H_7, i-C_3H_7, —CH_2—C_2H_5, —CH=CH_2, —CH=CH—CH_3,

—C≡CH, —C≡C—CH_3, —C≡C—C_6H_5, I, Br, CF_3, —CH=CHBr, or —CH=CH C_6H_5;

R_2 is



such that

X is H, OH, CH_2OH, N_3, NH_2, F, Cl or I, when Y is H, F or OH and Z is H or F;

Y is H, OH, N_3, NH_2, F, Br, Cl or I, when X is H, F or OH and Z is H or F;

Z is H, CH_2OH, F, Cl, I, N_3 or NH_2, when X and Y are H, F or OH,

provided that R_1 is not H or CH_3 when Y=Z=H and X=OH;

R_3 is H, F, Br, Cl, I or OH; and

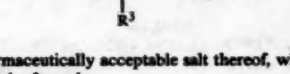
R_4 is H, CH_2OH, CH_2N_3, CH_2NH_2, OH, F, Br, Cl or I.

5,192,765
CERTAIN AMINES WHICH ARE MUSCARINIC RECEPTOR ANTAGONISTS

David Alker; Robert J. Bass, both of Birchington, and Peter E. Cross, Canterbury, all of England, assignors to Pfizer Inc., New York, N.Y.

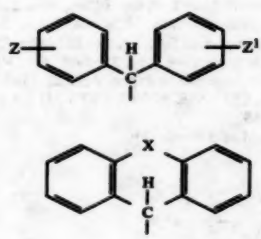
PCT No. PCT/EP89/01230, § 371 Date Jun. 6, 1991, § 102(e) Date Jun. 6, 1991, PCT Pub. No. WO90/04583, PCT Pub. Date May 3, 1990
PCT Filed Oct. 16, 1989, Ser. No. 687,913
Claims priority, application United Kingdom, Oct. 17, 1988, 8824262.3
Int. Cl.[5] C07C *217/10, 217/12;* **A16K** *31/135*
U.S. Cl. 514—255 **13 Claims**

1. A compound of the formula:



(I)

or a pharmaceutically acceptable salt thereof, wherein R^1 is a group of the formula:



where

Z and Z^1 are each independently hydrogen, halo or C_1–C_4 alkyl;

X is $-(CH_2)_2-$, $-CH=CH-$, $-CH_2-S-$, $-CH_2-O-$, $-S-$ or $-O-$;

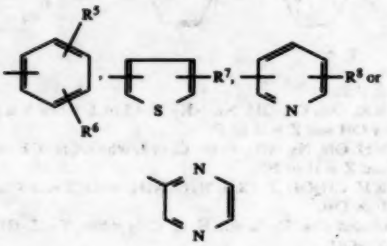
Y is a direct link, O or S;

R^2 and R^3 are each independently C_1–C_4 alkyl or together represent $-(CH_2)_p-$ where p is 2, 3, 4 or 5;

R^4 is H or C_1–C_4 alkyl;

m is 1, 2, or 3, with the proviso that when m is 1, Y is a direct link; and

R is a group of the formula:



where

either R^5 and R^6 are each independently hydrogen, C_1–C_4 alkyl, hydroxy—(C_1–C_4 alkyl), hydroxy, C_1–C_4 alkoxy, halo, halomethyl, nitro, cyano, sulphamoyl, $-CO(C_1$–C_4 alkyl), $-OCO(C_1$–C_4 alkyl), $-CO_2(C_1$–C_4 alkyl), carboxy, $-(CH_2)_qCONR^9R^{10}$, $-(CH_2)_qOCONR^9R^{10}$, $-(CH_2)_qNR^{11}R^{12}$ or $-NHSO_2NH_2$ in which R^9 and R^{10} are each independently H or C_1–C_4 alkyl, q is 0, 1 or 2, and either R^{11} and R^{12} are each independently H or C_1–C_4 alkyl or R^{11} is hydrogen and R^{12} is $-SO_2(C_1$–C_4 alkyl), $-CO(C_1$–C_4 alkyl) or $-CONH(C_1$–C_4 alkyl; or

R^5 and R^6, when attached to adjacent carbon atoms, together represent a group of the formula $-O(CH_2)_rO-$ where r is 1, 2 or 3, $-O(CH_2)_2-$ or $-(CH_2)_3-$;

R^7 is H, C_1–C_4 alkyl or $-CONH_2$; and

R^8 is H, C_1–C_4 alkyl or C_1–C_4 alkoxy.

5,192,766

N-ACRYLOYLPIPERAZINE DERIVATIVES, THEIR PREPARATION AND THEIR USE AS PAF ANTAGONISTS

Norio Nakamura; Nobuyuki Ohkawa; Takeshi Oshima; Masaaki Miyamoto, and Yasuteru Iijima, all of Tokyo, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

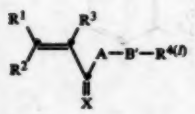
Continuation-in-part of Ser. No. 514,523, Apr. 25, 1990, abandoned. This application Aug. 28, 1991, Ser. No. 751,871

Claims priority, application Japan, Apr. 28, 1989, 1-111295

Int. Cl.[5] A61K *31/495;* **C07D** *241/04*

U.S. Cl. 514—255 **87 Claims**

1. A compound of formula (I):



wherein:

R^1 and R^2 are the same or different, and each represents a group having the formula $—R^5$, $—CH=CH—R^5$ or $—C\equiv C—R^5$,

wherein R^5 represents a C_6–C_{14} carbocyclic aryl group which is unsubstituted or has one to three substituents selected from the group consisting of substituents (a), defined below, or an aromatic heterocyclic group having from 5 to 14 ring atoms, of which from 1 to 3 are hetero-

atoms selected from the group consisting of nitrogen, oxygen and sulfur hetero-atoms, said heterocyclic group being unsubstituted or having one to three substituents selected from the group consisting of substituents (a), defined below:

R^3 represents a hydrogen atom, a C_1–C_6 alkyl group, a cyano group, or a group having the formula $—R^5$, in which R^5 is as defined above;

X represents an oxygen atom or a sulfur atom;

A represents a 1,4-piperazin-1,4-diyl group;

B represents a C_1–C_6 alkylene group, a carbonyl group, a thiocarbonyl group, a sulfinyl group or a sulfonyl group;

R^4 represents an unsubstituted phenyl group or a substituted phenyl group having from 1 to 5 substituents selected from the group consisting of substituents (a) and substituents (b), defined below;

substituents (a): C_1–C_6 alkyl group; C_1–C_6 alkoxy groups; C_1–C_6 haloalkyl groups; hydroxy groups; C_1–C_4 alkylenedioxy groups; C_1–C_6 aliphatic carboxylic acyloxy groups; substituted C_1–C_6 aliphatic carboxylic acyloxy groups having one to three substituents selected from the group consisting of substituents (c), defined below; C_7–C_{15} carbocyclic aromatic carboxylic acyloxy groups; substituted C_7–C_{15} carbocyclic aromatic carboxylic acyloxy groups having one to three substituents selected from the group consisting of substituents (d), defined below; C_8–C_{15} aralkyloxycarbonyloxy groups in which the aryl part is unsubstituted or has one to three substituents selected from the group consisting of substituents (d), defined below; C_1–C_6 alkanesulfonyloxy groups in which the alkane part is unsubstituted or has one to three substituents selected from the group consisting of substituents (c), defined below; arylsulfonyloxy groups in which the aryl part is unsubstituted or has one to three substituents selected from the group consisting of substituents (d), defined below; halogen atoms; and nitro groups;

substituents (b): C_1–C_6 alkylsulfonyl groups; C_1–C_6 alkylsulfinyl groups; and C_1–C_6 alkylthio groups; substituents (c): C_1–C_6 alkyl groups; C_1–C_6 haloalkyl groups; halogen atoms; C_1–C_6 alkoxy groups; and (C_1–C_6 alkanoyloxy)methoxycarbonyl groups;

substituents (d): C_1–C_6 alkyl groups; C_1–C_6 alkoxy groups; halogen atoms; unsubstituted C_6–C_{10} aryl groups; nitro groups; and (C_1–C_6 alkoxy)carbonyl groups;

and pharmaceutically acceptable salts thereof.

5,192,767

3-SUBSTITUTED PYRIDINES AND FUNGICIDES CONTAINING THEM

Bernhard Zipperer; Norbert Goetz, Worms; Ernst Buschmann, Ludwigshafen; Linhard Sproesser, Bad Duerkheim; Eberhard Ammermann, Ludwigshafen, and Gisela Lorenz, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

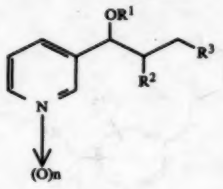
Continuation of Ser. No. 257,278, Oct. 19, 1988, abandoned. This application Nov. 26, 1990, Ser. No. 617,374

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1987, 3734750

Int. Cl.[5] A61K *31/44;* C07D *213, 28, 213, 55, 213, 57*

U.S. Cl. 514—277 7 Claims

1. A 3-substituted pyridine of the formula:

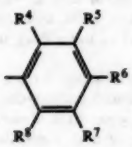


where

R^1 is hydrogen, C_1–C_8-alkyl, C_3–C_8-alkenyl, C_3–C_8-alkynyl, C_2–C_{12}-acyl, C_2–C_{12}-haloacyl, acryloyl, benzoyl which is unsubstituted or substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, phenyl, acetoxy, C_1–C_4-haloalkyl, halogen or nitro, or is benzyl which is unsubstituted or substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkyl, halogen, cyano or nitro;

R_2 is C_1–C_{12}-alkyl

R^3 is the radical:



with one or two of groups R^4 to R^8 being identical or different and each selected from the group consisting of hydrogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkyl, C_2–C_4-alkoxycarbonyl, phenyl, hydroxy or halogen with the remaining groups being hydrogen, or R^4 and R^5, or R^5 and R^6, denoting the group —CH=CH—CH=CH—,

n is 0 or 1,

and its plant-tolerated salts.

5,192,768

PYRAZOLOQUINOLINE DERIVATIVES

Fumio Suzuki; Yoshisuke Nakasato; Kenji Ohmori; Tadafumi Tamura; Hisashi Hosoe; Kazuhiro Kubo, and Ikufumi Yoshitake, all of Shizuoka, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

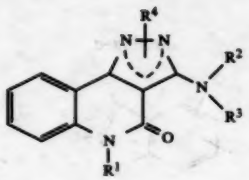
Filed Sep. 12, 1991, Ser. No. 757,988

Claims priority, application Japan, Sep. 14, 1990, 2-245389

Int. Cl.[5] C07D *471/04;* A61K *31/44*

U.S. Cl. 514—293 6 Claims

1. A 3-aminopyrazolo [4,3-c]quinolin-4-one compound having the following formula (I):



(I)

wherein R^1, R^2, and R^3 independently represent a hydrogen atom or a lower alkyl group; R^4 represents a hydrogen atom, a lower alkyl group, a halogen-substituted lower alkyl group or a lower alkoxycarbonyl group; the dotted line means that the pyrazole ring has two conjugated double bonds; and R^4 is bounded to the nitrogen atom at the 1-position or 2-position, or pharmacologically acceptable salt thereof.

5,192,769

Patent Not Issued For This Number

5,192,770

SEROTONERGIC ALPHA-OXOACETAMIDES

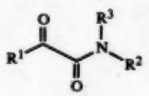
Robin D. Clark, Palo Alto; Richard M. Eglen, Mountain View; Joseph M. Muchowski; William L. Smith, both of Sunnyvale, and Klaus K. Weinhardt, San Francisco, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Dec. 7, 1990, Ser. No. 624,028

Int. Cl.[5] A61K *31/44;* C07D *453/02*

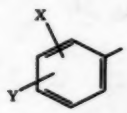
U.S. Cl. 514—305 34 Claims

1. A compound of Formula I

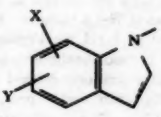


(I)

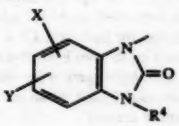
wherein R^1 is selected from



(a)

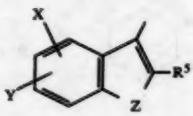


(b)



(c)

-continued

(d) 

in which:

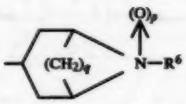
the dashed line denotes an optional bond;

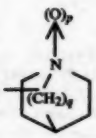
X and Y are independently selected from hydrogen, halo, cyano, hydroxy, lower alkoxy, lower alkyl, nitro, amino, aminocarbonyl, (lower alkyl)amino, di(lower alkyl)amino, and (lower alkanoyl)amino;

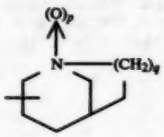
Z is —O—, —S— or —N(R^4)—; and

R^4 and R^5 are independently selected from hydrogen or lower alkyl or are together —$(CH_2)_m$— wherein n is an integer from 3 to 5; and

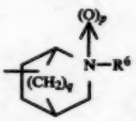
R^2 is selected from

(e) 

(f) 

(g) 

or

(h) 

in which:

p is 0 or 1:

q is 1, 2 or 3; and

R^6 is C_{1-7} alkyl, C_{3-8} cycloalkyl, C_{3-8} cycloalkyl-C_{1-2} alkyl, or a group $(CH_2)_tR^7$ where t is 1 or 2 and R^7 is thienyl, pyrrolyl, or furyl, each optionally further substituted by one or two substituents selected from C_{1-6} alkyl, C_{1-6} alkoxy, trifluoromethyl or halogen, or is phenyl optionally substituted by one or two substituents selected from C_{1-4} alkoxy, trifluoromethyl, halogen, nitro, carboxy, esterified carboxy, and C_{1-4} alkyl optionally substituted by hydroxy, C_{1-4} alkoxy, carboxy, esterified carboxy or in vivo hydrolyzable acyloxy; and R^3 is selected from hydrogen or lower alkyl; or a pharmaceutically acceptable salt, as an individual isomer or mixture of isomers thereof.

5,192,771

(QUINOLIN-2-YL-METHOXY)PHENYLACETIC ACID DERIVATIVES CONTAINING CYCLIC SUBSTITUENTS

Klaus Mohrs, Wuppertal; Siegfried Raddatz; Romanis Fruchtmann, both of Cologne; Christian Kohlsdorfer, Erftstadt; Reiner Müller-Peddinghaus, and Pia Theisen-Popp, both of Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

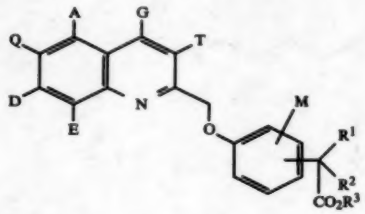
Filed Aug. 1, 1990, Ser. No. 561,038

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1989, 3927930

Int. Cl.[5] A01N *43/42*; C07D *215/12, 214/14*

U.S. Cl. 514—311 **11 Claims**

1. A (quinolin-2-yl-methoxy)phenylacetic acid derivative containing a cyclic substituent of the formula

(I) 

in which

A, Q D, E, G, T and M are identical or different and

represent hydrogen, hydroxyl, halogen, trifluoromethyl, trifluoromethoxy or carboxyl,

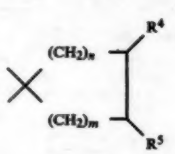
represent straight-chain or branched alkyl having up to 10 carbon atoms, which is optionally substituted by hydroxyl or halogen,

represent straight-chain or branched alkoxy or alkoxycarbonyl having up to 10 carbon atoms, or

represent aryl having 6 to 10 carbon atoms, which is optionally substituted by halogen, nitro, cyano or by straight-chain or branched alkyl of the alkoxy having up to 8 carbon atoms,

R^1 and R^2, together with the carbon atom, form a 4- to 8-membered, saturated or unsaturated carbocyclic ring, which is optionally substituted by up to 3 identical or different substituents from the group consisting of straight-chain or branched alkyl or alkoxy having in each case up to 8 carbon atoms, halogen, hydroxyl and aryl having 6 to 10 carbon atoms, or

R^1 and R^2, together with the carbon atom, represent a radical of the formula



wherein

m and n are identical or different and denote the number 0, 1, 2, 3 or 4, and

R^4 and R^5 together complete an aryl radical having 6 to 10 carbon atoms or which is optionally substituted by straight-chain or branched alkyl or alkoxy having in each case up to 8 carbon atoms, halogen or aryl having 6 to 10 carbon atoms, and

R^3—represents hydrogen, straight-chain or branched alkyl having up to 8 carbon atoms or phenyl, or a salt thereof.

5,192,772

THERAPEUTIC AGENTS

Yoshiaki Yoshikuni, Uji; Nobutoshi Ojima, Moriyama, and Kazuya Mori, Kyoto, all of Japan, assignors to Nippon Shinyaku Co. Ltd., Japan

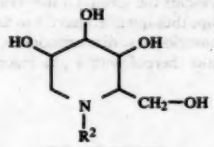
Continuation of Ser. No. 281,495, Dec. 8, 1988, abandoned. This application Aug. 12, 1991, Ser. No. 747,454

Claims priority, application Japan, Dec. 9, 1987, 62-311348

Int. Cl.[5] A61K *31/445*

U.S. Cl. 514—315 2 Claims

1. A method of accelerating fibronoylsis in humans and animals which comprises administering to a human or animal in need thereof an effective amount sufficient to accelerate fibronolysis of a compound of the formula:



a pharmaceutically acceptable acid addition salt thereof or a quaternary salt thereof wherein R^2 is hydrogen, alkyl of 1 to 10 carbon atoms, carboxyalkyl of 1 to 10 carbon atoms in the alkyl moiety, lower alkyloxycarbonylalkyl of 1 to 10 carbon atoms int he alkyl moiety, hydroxyalkyl of 1 to 10 carbon atoms, cycloalkyl lower alkyl of 3 to 7 carbon atoms in the cycloalkyl moiety, arylalkyl of 1 to 10 carbon atoms in the alkyl moiety, aryloxyalkyl of 1 to 10 carbon atoms in the alkyl moiety, alkenyl of 2 to 10 carbon atoms, hydroxyalkenyl of 2 to 10 carbon atoms, arylalkenyl of 2 to 10 carbon atoms in the alkenyl moiety, aryloxyalkenyl of 2 to 10 carbon atoms in the alkenyl moiety or lower alkylcarbamoylalkyl of 1 to 10 carbon atoms int he alkyl moiety in combination with a pharmaceutically acceptable carrier.

5,192,773

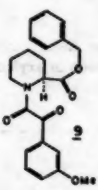
IMMUNOSUPPRESSIVE COMPOUNDS

David A. Armistead, Maynard; Joshua S. Boger, Concord; Harold V. Meyers, Lexington; Jeffrey O. Saunders, Littleton, and Roger D. Tung, Cambridge, all of Mass., assignors to Vertex Pharmaceuticals, Inc., Cambridge, Mass.

Filed Jul. 2, 1990, Ser. No. 547,814

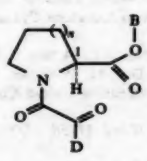
Int. Cl.[5] C07D *211/32, 211/04, 267/08*

U.S. Cl. 514—315 10 Claims



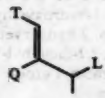
9

1. An immunosuppressant compound represented by the formula:



and pharmaceutically acceptable salts thereof, wherein n is 1 or 2;

wherein B is CHL-Ar, (C1–C6)-straight or branched alkyl, (2—C6)-straight or branched alkenyl, (C5–C7)-cycloalkyl, (C5–C7)-cycloalkenyl or Ar substituted (C1–C6)-alkyl or alkenyl, or



wherein L and Q are independently hydrogen, (C1–C6)-straight or branched alkyl or (C2–C6)-straight or branched alkenyl;

wherein T is Ar or substituted cyclohexyl with substituents at positions 3 and 4 which are independently selected from the group consisting of hydrogen, hydroxyl, O—(C1–C4)-alkyl or O—(C2–C4)-alkenyl and carbonyl;

wherein Ar is selected from the group consisting of 1-naphthyl, 2-naphthyl, 2-furyl, 3-furyl, 2-thienyl, 2-pyridyl, 3-pyridyl, 4-pyridyl and phenyl having one to three substituents which are independently selected from the group consisting of hydrogen, halo, hydroxyl, nitro, CF_3, (C1–C6)-straight or branched alkyl or (C2–C6)-straight or branched alkenyl, O—(C1–C4)-straight or branched alkyl or O—(C2–C4)-straight or branched alkenyl, O-benzyl, O-phenyl, amino and phenyl;

wherein D is O—(C1–C4)-straight or branched alkyl or O—(C2–C4)-straight or branched alkenyl, (C1–C6)-straight or branched alkyl or (C2–C6)-straight or branched alkenyl, ((C5–C7)-cycloalkyl or (C5–C7)-cycloalkenyl) which may be substituted with (C1–C4)-straight or branched alkyl, (C2–C4)-straight or branched or alkenyl, 2-indolyl, 3-indolyl, ((C1–C4)-alkyl or (C2–C4)-alkenyl)-Ar or Ar;

wherein the stereochemistry at carbon position 1 is R or S;

provided that when n=1 then B is not methyl, ethyl, propyl or butyl when D is butyl or methyl; and

provided that when n=1 then D is a group other than phenyl and B is a group other than benzyl, and when n=2 then B is into methyl or t-butyl.

5,192,774

SUBSTITUTED ACETAMIDE DERIVATIVES, PROCESS FOR THEIR PREPARATION AND ANTIULCER DRUG CONTAINING SAME

Katsuo Shinozaki; Katsuyuki Ishii, both of Konan, and Ikuo Ueda, Toyonaka, all of Japan, assignors to Zeria Pharmaceutical Co., Ltd., Tokyo, Japan

PCT No. PCT/JP89/00670, § 371 Date May 7, 1990, § 102(e) Date May 7, 1990, PCT Pub. No. WO90/00544, PCT Pub. Date Jan. 25, 1990

PCT Filed Jul. 4, 1989, Ser. No. 465,238

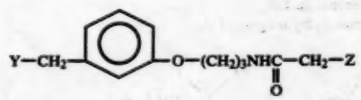
Claims priority, application Japan, Jul. 5, 1988, 63-165822

Int. Cl.[5] A01N *43/40*; C07D *211/32, 211/60*

U.S. Cl. 514—315 9 Claims

1. A compound of the formula (I):

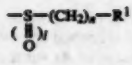
(I)



in which Y is piperidino, 1-pyrrolidinyl, or 3-hydroxy-1-pyrrolidinyl, and Z is a group selected from the group consisting of those having the formulas (a) to (e):

(a) cyano;

(b) a group of the formula



in which l represents an integer from 0 to 2, n represents an integer from 1 to 3, R^1 is a hydroxy group, 1,2-dihydroxyethyl group, 1-hydroxyethyl group, 2-phenoxy-1-hydroxyethyl group, 2-hydroxyethoxy group, lower alkoxycarbonyl group, 2,2-dimethyl-1,3-dioxolan-4-yl group, or a lower acyloxymethyl group;

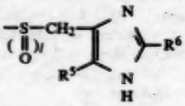
(c) a group of the formula

in which R^2 is amino, lower alkylamino, di(2-hydroxyethyl)amino, lower alkyl, or lower alkoxy;

(d) a group of the formula

in which R^3 and R^4 independently are hydrogen or lower alkyl; and

(e) a group of the formula



in which l represents an integer from 0 to 2, and R^5 and R^6 independently are hydrogen or lower alkyl; or a salt or cyclodextrin inclusion compound thereof.

5,192,775

NEW AMINOMETHYLPIPERIDINE COMPOUNDS

Charles Malen, Fresnes; Guillaume de Nanteuil, Suresnes, and Francis Colpaert, Vesinet, all of France, assignors to Adir et Compagnie, Courbevoie, France

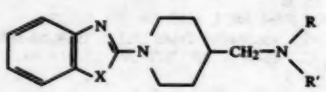
Filed Feb. 26, 1991, Ser. No. 661,494

Claims priority, application France, Feb. 27, 1990, 90 02394

Int. Cl.[5] A61K *31/445*; C07D *401/04*

U.S. Cl. 514—321 **6 Claims**

1. A compound selected from those of formula (I) :

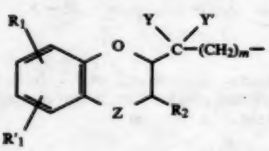


(I)

in which:

X represents sulfur,

R represents hydrogen or A:



A

in which:

Z represents oxygen or CH_2,

Y represents hydrogen,

Y' represents hydrogen, or,

Y and Y' form together oxygen,

R_1 represents hydrogen, halogen, linear or branched lower alkyl, or linear or branched lower alkoxy,

R'_1 represents hydrogen, halogen, or linear or branched lower alkoxy,

R_2 represents hydrogen or linear or branched lower alkyl, and

m is equal to 0 or 1,

R' represents hydrogen, linear or branched lower alkyl or A, E or F, with the qualification that R' represents hydrogen when R represents the group G, the term lower indicates that the groups thus qualified have 1 to 6 carbon atoms, as well as its enantiomers, diasteroisomers, and epimers an additional salts thereof with a pharmaceutically, acceptable, acid.

5,192,776

1-SUBSITUTED-4-PENTAFLUOROPHENOXYPIPERIDINES

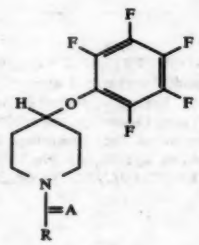
Grover C. Helsley, Pluckemin; Larry Davis, Sergeantsville, and Gordon E. Olsen, Somerset, all of N.J., assignors to Hoechst-Roussel Pharmaceuticals Incorporated, Somerville, N.J.

Continuation of Ser. No. 167,935, Mar. 14, 1988, abandoned. This application Sep. 23, 1991, Ser. No. 764,280

Int. Cl.[5] A61K *31/445*; C07D *211/46*

U.S. Cl. 514—327 **13 Claims**

1. A compound of the formula



wherein A is oxygen or sulfur; and R is amino, loweralkylamino, diloweralkylamino or arylamino.

5,192,777

MACROLIDE COMPOUNDS

Michael V. J. Ramsay, South Harrow; Edward P. Tiley, Pinner, and Derek R. Sutherland, Chalfont St Giles, all of United Kingdom, assignors to American Cyanamid Company, Stamford, Conn.

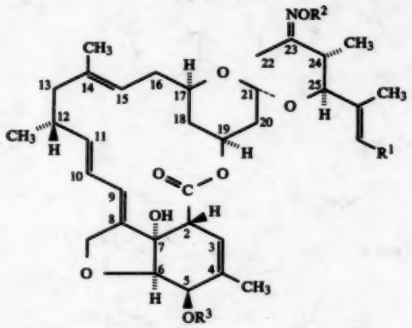
Continuation of Ser. No. 242,184, Sep. 9, 1988, abandoned. This application Dec. 11, 1990, Ser. No. 626,125

Claims priority, application United Kingdom, Sep. 11, 1987, 8721377

Int. Cl.[5] A61K *31/44, 31/38, 31/335*; C07D *315/00*

U.S. Cl. 514—333 **8 Claims**

1. A compound of formula (I)



or a pharmaceutically or an agronomically acceptable salt thereof, wherein R^1 represents a methyl, ethyl or isopropyl group; R^2 represents a C_5–C_7 alkyl group interrupted by an oxygen, C_2–C_7 alkyl group interrupted by a sulphur atom, phenyl C_2–C_7 alkyl optionally substituted by nitrogen, halogen, C_1–C_7 alkoxy or C_1–C_7 alkyl or C_1–C_7 alkyl group substituted with an unsaturated 5-membered monocyclic ring containing one heteroatom selected from the group consisting of oxygen, nitrogen and sulphur or an unsaturated 6-membered monocyclic ring containing one nitrogen; OR^3 is a hydroxyl group, $OCOR^4$, OCO_2R^4, $OCSOR^4$, formyloxy group, OR^5, OSO_2R^6, a silyloxy group, a cyclic or acyclic acetaloxy group, $OCO(CH_2)_nCO_2R^7$, where n represents zero, 1 or 2, or $OCONR^8R^9$; wherein R^4 and R^5 are each independently C_1–C_8 alkyl, C_2–C_8 alkenyl, C_2–C_8 alkynyl, C_3–C_{12} cycloalkyl, phenyl, an unsaturated 5-membered monocyclic ring containing one heteroatom selected from the group consisting of oxygen, nitrogen and sulphur, an unsaturated 6-membered monocyclic ring containing one nitrogen or C_1–C_6 alkyl group substituted with a phenyl, an unsaturated 5-membered monocyclic ring containing one heteroatom selected from the group consisting of oxygen, nitrogen and sulphur or an unsaturated 6-membered monocyclic ring containing one nitrogen; R^6 is a C_1–C_4 alkyl, phenyl or naphthyl; R^7 is a hydrogen atom, C_1–C_8 alkyl, C_2–C_8 alkenyl, C_2–C_8 alkynyl, C_3–C_{12} cycloalkyl, phenyl, an unsaturated 5-membered monocyclic ring containing one heteroatom selected from the group consisting of oxygen, nitrogen and sulphur, an unsaturated 6-membered monocyclic ring containing one nitrogen or C_1–C_6 alkyl group substituted with a phenyl, an unsaturated 5-membered monocyclic ring containing one heteroatom selected from the group consisting of oxygen, nitrogen and sulphur or an unsaturated 6-membered monocyclic ring containing one nitrogen; and R^8 and R^9 are each independently a hydrogen atom or C_1–C_4 alkyl; and the group $=NOR^2$ is in the E configuration.

5,192,778

DIALKOXYMETHYLIMIDAZOLIDINE DERIVATIVES, PREPARATION THEREOF, INSECTICIDES CONTAINING SAME AS AN EFFECTIVE INGREDIENT AND INTERMEDIATES THEREFOR

Kenji Kodaka; Katsutoshi Kinoshita; Michihiko Nakaya; Koichi Ebihara; Shirou Shiraishi; Eiichi Yamada, all of Mobara, and Satoshi Numata, Chiba, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

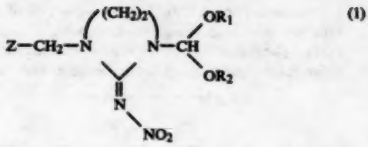
Filed Mar. 29, 1991, Ser. No. 677,030

Claims priority, application Japan, Apr. 3, 1990, 2-87368; Feb. 26, 1991, 3-30815

Int. Cl.[5] C07D *401/06*; A61K *31/44*

U.S. Cl. 514—341 **4 Claims**

1. An imidazolidine of the formula (1)



(1)

wherein Z represents a 2-chloropyridin-5-yl group or a 2-chlorothiazol-5-yl group, R_1 and R_2, respectively, represent a lower alkyl group having from 1 to 6 carbon atoms, a lower haloalkyl group having from 1 to 3 carbon atoms or a lower alkyl group having from 1 to 3 carbon atoms and substituted with a lower alkoxy group having from 1 to 3 carbon atoms, or R_1 and R_2 are joined to form a cyclic alkylene group having from 2 to 3 carbon atoms.

5,192,779

SUBSTITUTED-ACETAMIDE COMPOUND AND A PROCESS FOR THE PREPARATION THEREOF

Youichi Shiokawa, Ibaraki; Kazuo Okumura, Toyono; Kazuhiko Take, Osaka, and Kazunori Tsubaki, Ikeda, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

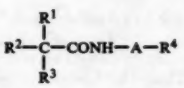
Division of Ser. No. 475,301, Feb. 5, 1990. This application Aug. 28, 1991, Ser. No. 751,120

Claims priority, application United Kingdom, Feb. 14, 1989, 8903253; Apr. 28, 1989, 8909796

Int. Cl.[5] C07D *213/56, 213/81, 213/84*; A61K *31/44*

U.S. Cl. 514—346 **8 Claims**

1. A substituted-acetamide compound of the formula:



wherein

R^1 is phenyl, naphthyl, or anthracenyl, each of which may have one or more substituents selected from the group consisting of halo, lower alkyl, and lower alkoxy;

R^2 is phenyl, naphthyl, or anthracenyl, each of which may have one or more substituents selected from the group consisting of halo, lower alkyl or lower alkoxy; lower alkyl; or cyclo(lower)alkyl,

R^3 is hydrogen, hydroxy, halogen, lower alkenyl, amino or protected amino,

R^4 is pyridyl or tetrahydropyridyl, independent of one another, optionally substituted with a member selected from the group consisting of lower alkyl, hydroxy, hydroxyl(lower)alkyl, amino protective groups and cyanoimino and

A is lower alkylene or a pharmaceutically acceptable salt thereof.

5,192,780

METHODS USING ANTIALLERGICS AND ANTIHISTAMINES

Billie M. York, Fort Worth; Stella M. Robertson, Arlington, and John M. Yanni, Burleson, all of Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Continuation-in-part of Ser. No. 616,049, Nov. 20, 1990, abandoned, which is a continuation-in-part of Ser. No. 452,189, Dec. 18, 1989, abandoned. This application Jul. 23, 1991, Ser. No. 734,728

Int. Cl.[5] A61K *31/47, 31/275*

U.S. Cl. 514—357 **4 Claims**

1. A pharmaceutical composition for treating ophthalmic allergic responses, comprising:

about 0.01 to about 4.0 wt. % of an antiallergic compound selected from the group consisting of lodoxamide, al-

buterol, terbutaline, pirbuterol acetate, fenotenol, and bitolterol and about 0.01 to about 3.0 wt. % of an anthistamine selected from the group consisting of 1-(2-ethyoxyethyl)-2-(4-methyl-1-homopiperazinyl)-benzimidazole difumerale (emedastine), levocabastine, and meguitazine.

5,192,781

THIAZOLE DERIVATIVES WHICH ARE ANGIOTENSIN II RECEPTOR ANTAGONISTS, THEIR METHODS OF PREPARATION AND PHARMACEUTICAL COMPOSITIONS IN WHICH THEY ARE PRESENT

Nicole Bru-Magniez, Paris; Michèle Launay, Rueil-Malmaison, and Jean-Marie Teulon, La Celle Saint Cloud, all of France, assignors to Laboratoires UPSA, Agen, France

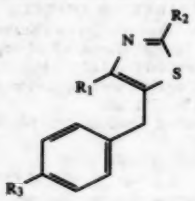
Filed Jul. 11, 1991, Ser. No. 728,393

Claims priority, application France, May 31, 1991, 91 06595

Int. Cl.[5] A61K *31/425*; C07D *277/30*

U.S. Cl. 514—365 **8 Claims**

1. A thiazole compound of the formula



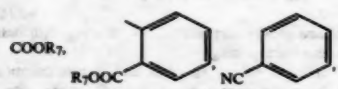
wherein:

R_1 is a lower alkyl radical having 1 to 6 carbon atoms or a C_3–C_7 cycloalkyl radical;

R_2 is a hydrogen atom, a halogen atom, a lower alkyl radical having 1 to 6 carbon atoms, a lower halogenoalkyl radical having 1 to 6 carbon atoms, a C_3–C_7 cycloalkyl radical, a phenyl radical or an heteroaromatic ring selected from the group consisting of heteroaromatic rings having 5 to 7 atoms and containing at least one nitrogen, oxygen or sulfur atom in the ring, optionally substituted by a lower alkyl group, a halogen, a halogenoloweralkyl group, a loweralkoxy group or a thioloweralkyloxy group;

R_2 can also be $X—(CH_2)_n—CN$, $X—(CH_2)_n—COOR_4$, $X—(CH_2)_n—OR_4$, $X—(CH_2)_n—SR_4$ or $X—(CH_2)_n—CONR'R''$, wherein X is a bond, a sulfur atom or a group NH, n is an integer from 0 to 5, R_4 is a hydrogen atom, a lower alkyl radical having 1 to 6 carbon atoms, a lower halogenoalkyl radical having 1 to 6 carbon atoms or a C_3–C_7 cycloalkyl radical, R_5 is defined in the same way as R_4 can also be phenyl, a heteroaromatic ring as defined above or methanebiphenyl, and R' and R'' are independently a hydrogen atom, a lower alkyl radical having 1 to 6 carbon atoms or a C_3–C_7 cycloalkyl radical or they can form, together with the nitrogen atom to which they are attached, a heterocycle selected from the group consisting of pyrrolidine, piperidine, morpholine, thiomorpholine, piperazine and N-substituted piperazine wherein the N-substituent is a lower alkyl radical having 1 to 6 carbon atoms, phenyl or a heteroaromatic ring as defined above; and

r_3 is a nitro or amino group or one of the following groups:



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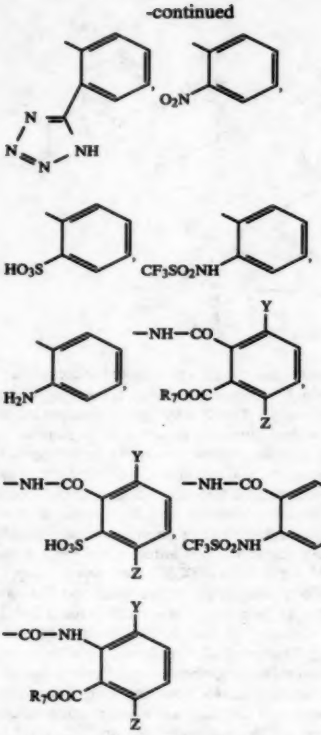


in which R_7 is a hydrogen atom, a lower alkyl radical having 1 to 6 carbon atoms or a benzyl radical and Y and Z are independently a hydrogen atom, a halogen atom, a lower alkyl radical having 1 to 6 carbon atoms, an O-lower alkyl radical or trifluoromethyl;

or a pharmaceutically acceptable addition salt thereof.

5,192,782

ALKOXY-SUBSTITUTED DIHYDROBENZOPYRAN-2-CARBOXYLIC ACIDS AND DERIVATIVES THEREOF

Stevan W. Djuric, Glenview; Thomas D. Penning, Elmhurst, and James P. Snyder, Glenview, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

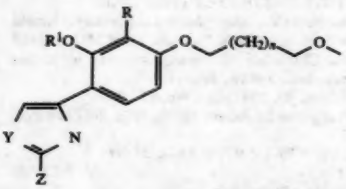
Division of Ser. No. 521,777, May 10, 1990, Pat. No. 5,073,562.

This application Sep. 13, 1991, Ser. No. 759,272

Int. Cl.[5] C07D *413/12*; A61K *31/42*

U.S. Cl. 514—376 **21 Claims**

1. A compound of the formula:



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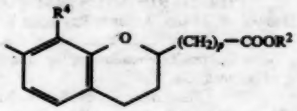


wherein

R represents alkyl having 2 to 6 carbon atoms, alkenyl having 2 to 6 carbon atoms, alkynyl having 2 to 6 carbon atoms, or $-(CH_2)_m-R^3$ wherein R^3 represents cycloalkyl of 3 to 5 carbons atoms and m is 1 or 2;

R^1 represents alkyl having 1 to 4 carbon atoms;

R^2 represents hydrogen or alkyl having 1 to 5 carbon atoms;

R^4 represents alkyl having 1 to 6 carbon atoms;

n is an integer from 1 to 5;

p is an integer from 0 to 6;

Y represents oxygen; and

Z represents hydrogen, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, NR^4R^5 wherein R^4 and R^5 are independently hydrogen or alkyl having 1 to 4 carbon atoms, or SR^6 wherein R^6 is, hydrogen, benzyl or alkyl having 1 to 4 carbon atoms;

and the stereoisomers and pharmaceutically acceptable salts thereof.

5,192,783

1-ARALKYL-1,2,4-TRIAZOLES

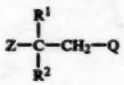
George A. Miller, Maple Glen, and Hak-Foon Chan, Doylestown, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 252,633, Apr. 9, 1981, abandoned, which is a continuation of Ser. No. 798,716, May 19, 1977, abandoned. This application Sep. 30, 1985, Ser. No. 781,848

Int. Cl.[5] A01N *43/653*; C07D *249/08, 249/14*

U.S. Cl. 514—383 29 Claims

1. A compound of the formula



wherein

Z is phenyl or phenyl substituted with up to two halogen substituents;

R^1 is hydrogen;

R^2 is (C_1–C_{12})alkyl, phenyl, benzyl, phenethyl, or phenyl, benzyl or phenethyl substituted with up to two halogen substituents; and

Q is 1-(1,2,4-triazolyl); and the agronomically acceptable enantiomorphs, acid addition salts and metal salt complexes.

5,192,784

ETANIDAZOLE INJECTABLE SOLUTION

Surendra M. Bahal, Wayne, Pa.; Kenneth S. Field, New Castle, and Michael B. Maurin, Newark, both of Del., assignors to Du Pont Merck Pharmaceutical Company, Wilmington, Del.

Continuation of Ser. No. 709,174, Jun. 3, 1991, abandoned. This application Jun. 26, 1992, Ser. No. 906,022

Int. Cl.[5] A61K *31/415*

U.S. Cl. 514—398 7 Claims

1. A stable, injectable, ready to use aqueous pharmaceutical composition having a pH in the range of 3.0 to 4.5, and comprising:

a) a chemotherapeutically effective amount of etanidazole in an amount of from about 20 to 150 mg of etanidazole/ml of composition;

b) a buffer system selected from the group consisting of citrate, acetate and phosphate,

c) a tonicity adjusting agent which is sodium chloride; and

d) a stabilizing agent selected from the group consisting of imidazole, ethanolamine, diethanolamine, triethanolamine, thiethylamine and ethylenediamine in an amount of about 0.001% to about 5% of the composition and effective to inhibit precipitation of the etanidazole;

e) said composition minimizing the degration of etanidazole by hydrolysis, whereby the stability of etanidazole in an aqueous composition is enhanced.

5,192,785

SULFAMATES AS ANTIGLAUCOMA AGENTS

Young S. Lo, Hockessin, Del.; Joseph C. Nolan, Midlothian, and Dwight A. Shamblee, Richmond, both of Va., assignors to A. H. Robins Company, Incorporated, Richmond, Va.

Continuation-in-part of Ser. No. 406,736, Sep. 3, 1989, abandoned. This application Jun. 10, 1991, Ser. No. 712,855

Int. Cl.[5] A61K *31/415, 31/255, 31/325*

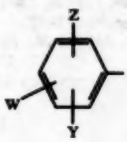
U.S. Cl. 514—399 20 Claims

1. A method for reducing intraocular pressure in a mammal, comprising administering to said mammal an effective amount of a compound having the formula:

$$(HO)_p-A-[-OS(O)_2NR^1R^2]_z$$

wherein

A is aryloxy-alkyl, in which the aryl moiety is a substituted phenyl group of the formula:



where

X is hydrogen, halo, CF_3, nitro-, $-SO_2NR_1R_2$, loweralkoxy, hydroxy, amino, loweralkylamino, diloweralkylamino, methylcarbonylamino, loweralkyl, methyloxycarbonyl, 1H-imidazol-1-yl, 3-thiazole, 1-pyrrole, phenyl, 1H-triazol-1-yl, cyano, 2-loweralkyl-1H-imidazol-1-yl, 4-loweralkyl-1H-imidazol-1-yl, 4-phenyl-1H-imidazol-1-yl, —COOH, —COOM wherein M is a pharmaceutically acceptable metal cation, aryloxy or aroyl;

Y is hydrogen, halo, loweralkoxy, hydroxy or loweralkyl; and

W is hydrogen, loweralkoxy or loweralkyl;

and said alkyl portion of A being substituted on one or more carbon atoms by the depicted sulfamyloxy group, where Z is the number of $-OS(O)_2NR^1R^2$ groups present on the alkyl moiety of A and is always at least one;

p is the number of hydroxyl groups present on the alkyl moiety of A which have not been converted to $-OS(O)_2NR^1R^2$ groups, including zero;

R^1 is hydrogen or loweralkyl;

R^2 is hydrogen, loweralkyl, $-CO_2R^1$, or $-CO_2-M+$ wherein M is defined above;

and the pharmaceutically acceptable salts thereof when they can be formed and the optical isomers thereof, when they can be formed.

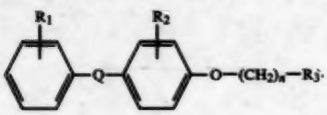
5,192,786

SUBSTITUTED BIPHENYLALKOXYAMINES

Jeffery B. Press, Penllyn, Pa., and Pauline Sanfilippo, Flemington, N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Dec. 21, 1990, Ser. No. 632,274
Int. Cl.[5] A61K *31/415*; C07D *233/60*
U.S. Cl. 514—399 9 Claims

1. A compound of the formula



where

R_1 and R_2 are the same or different and are hydrogen, halogen, C_1–C_6 alkyl or C_1–C_6 alkoxy;

R_3 is imidazole;

R_4 and R_5 are the same or different and are hydrogen or C_1–C_6 alkyl;

Q is a carbonyl, methylene or a vinylene and

n is 3–6, and the pharmaceutically acceptable acid addition salts thereof.

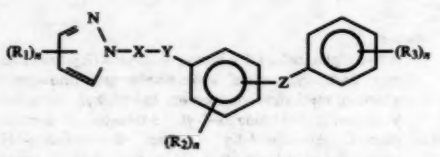
5,192,787

PYRAZOLE-CONTAINING JUVENILE HORMONE MIMICS FOR PEST CONTROL

William S. Bowers, Tucson, Ariz., and Takeyoshi Sugiyama, Sendai, Japan, assignors to Arizona Board of Regents Acting for the University of Arizona, Tucson, Ariz.

Division of Ser. No. 284,394, Dec. 14, 1988, Pat. No. 4,943,586.
This application Jun. 15, 1990, Ser. No. 538,422
Int. Cl.[5] A01N *43/56*; C07D *231/16*, *231/20*, *231/28*
U.S. Cl. 514—404 14 Claims

1. A compound having pesticidal activity and which has the following formula:



wherein

each n is independently 1, 2 or 3;

R_1 is hydrogen, C_{1-6} alkyl, halogen, C_{1-6} alkoxy, C_{2-6} alkoxycarbonyl, amino, nitro, CF_3, or C_{1-5}-(alkyl and dialkyl) amino;

X is a divalent hydrocarbon radical having 1 to 8 carbon atoms in its backbone, which may be interrupted by one or two of O or S, and which may be substituted by one or more OH groups, CF_3 groups, halogens, C_{1-4} alkyl groups or C_{1-4} alkoxy groups;

R_2 is hydrogen, halogen, C_{1-6} alkyl, C_{1-6} alkoxy, C_{2-6} alkoxycarbonyl, amino, nitro, or CF_3;

R_3 is hydrogen, halogen, C_{1-6} alkyl, C_{1-6} alkoxy, C_{2-6} alkoxycarbonyl, amino, nitro, C_{1-5}-(alkyl or dialkyl) amino or CF_3; and

Y and Z are, independently, S, SO, SO_2 or CH_2, with the proviso that when Y and Z are independently S, SO or SO_2, R_2 is amino, nitro or CF_3, or R_3 is amino, nitro, or C_{1-5}-(alkyl and dialkyl) amino.

5,192,788

PORPHYRIN ANTIVIRAL COMPOSITIONS

Dabney W. Dixon, Atlanta; Raymond F. Schinazi, Tucker, and Luigi G. Marzilli, Atlanta, all of Ga., assignors to Georgia State University Foundation, Inc. and Emory University, both of Atlanta, Ga.

Filed May 23, 1988, Ser. No. 197,764
The portion of the term of this patent subsequent to Apr. 28, 2009, has been disclaimed.
Int. Cl.[5] A61K *31/40*
U.S. Cl. 514—410 12 Claims

1. A method for treating and preventing HIV infection in a human comprising administering an amount of a porphyrin or a derivative thereof to a human in an amount effective to inhibit infection by HIV.

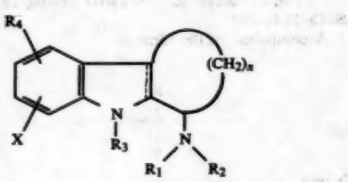
5,192,789

SUBSTITUTED 1,2,3,4-TETRAHYDROCYCLOPENT[B]INDOLES, 1,2,3,3A,4,8A-HEXAHYDROCYCLOPENT[B]INDOLES AND RELATED COMPOUNDS

Helen H. Ong, Whippany, N.J.; Gerard J. O'Malley, Newtown; Michael C. Merriman, Hellertown, both of Pa., and Mark G. Palermo, Piscataway, N.J., assignors to Hoechst-Roussel Pharmaceuticals Incorporated, Somerville, N.J.

Continuation-in-part of Ser. No. 642,952, Jan. 18, 1991, Pat. No. 5,100,891. This application Jan. 9, 1992, Ser. No. 818,703
Int. Cl.[5] A61K *31/40*; C07D *209/94*
U.S. Cl. 514—411 9 Claims

1. A compound of the formula,

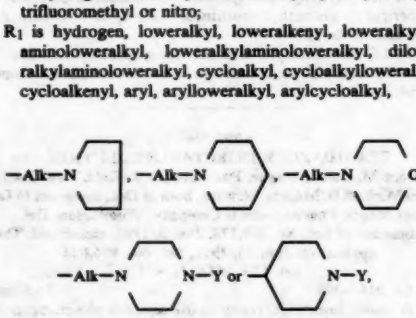


where

n is 2,3,4 or 5;

X is hydrogen, loweralkyl, loweralkoxy, hydroxy, halogen, trifluoromethyl or nitro;

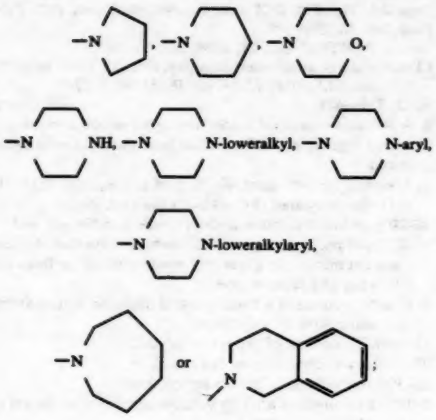
R_1 is hydrogen, loweralkyl, loweralkenyl, loweralkynyl, aminoloweralkyl, loweralkylaminoloweralkyl, diloweralkylaminoloweralkyl, cycloalkyl, cycloalkylloweralkyl, cycloalkenyl, aryl, aryllowerallcyl, arylcycloalkyl,



the group "Alk" signifying a divalent loweralkylene group, and Y signifying hydrogen, loweralkyl, aryl or aryllowerallcyl;

R_2 is hydrogen, loweralkyl, formyl, loweralkylcarbonyl, benzyloxycarbonyl or loweralkylaminocarbonyl; or alternatively, the group

as a whole is



R_3 is hydrogen, loweralkyl, arylloweralkyl, loweralkylcarbonyl or loweralkoxycarbonyl;

R_4 is

wherein R_7 is loweralkyl, aryl or arylloweralkyl; or a pharmaceutically acceptable addition salt thereof.

5,192,790

3-SUBSTITUTED-2-OXINDOLE DERIVATIVES AS INHIBITORS OF INTERLEUKIN-1 BIOSYNTHESIS

Carl J. Goddard, Groton; Douglas C. Hanson, Niantic, and Gary R. Schulte, Stonington, all of Conn., assignors to Pfizer Inc, New York, N.Y.

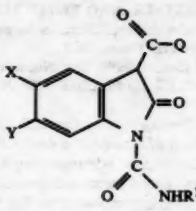
Continuation of Ser. No. 529,050, May 25, 1990, which is a continuation-in-part of Ser. No. 421,445, Oct. 13, 1989, abandoned. This application Dec. 17, 1991, Ser. No. 808,491

The portion of the term of this patent subsequent to Aug. 29, 2006, has been disclaimed.

Int. Cl.[5] A61K *31/40*

U.S. Cl. 514—414 **41 Claims**

1. A method of inhibiting interleukin-1 biosynthesis in a mammal in need thereof which comprises administering to said mammal an interleukin-1 biosynthesis inhibiting amount of a compound of the formula



or a pharmaceutically-acceptable base salt thereof, wherein X and Y are each H, F, Cl, Br or CF_3; R^1 is H or (C_1–C_4) straight or branched-chain alkyl; and Q is

where R^2 is H or (C_1–C_3)alkyl that when R^2 is H, R^1 is not H.

5,192,791

FUSED RING HETEROCYCLES AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

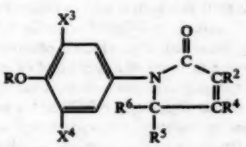
Sung J. Lee, Clarks Summit, Pa., assignor to Biofor, Ltd., Waverly, Pa.

Division of Ser. No. 248,942, Sep. 26, 1988, Pat. No. 4,958,482. This application Aug. 14, 1990, Ser. No. 551,457

Int. Cl.[5] C07D *209/46*; A61K *31/40*

U.S. Cl. 514—418 **20 Claims**

15. A method for treating inflammation in a mammal which comprises administering a safe and effective amount of an active ingredient of the formula:



wherein:

R is a member selected from the group consisting of hydrogen, alkyl, alkanoyl and aroyl;

R^2 and R^4 are joined to form an unsaturated hydrocarbylene chain having four carbon atoms between their points of attachment to the heterocyclic ring;

R^5–R^6 are the same or different and represent a member selected from the group consisting of hydrogen and lower alkyl; and

X^3 and X^4 are the same or different and represent a member selected from the group consisting of tertiary-alkyl and trimethylsilyl; or a non-toxic pharmacologically acceptable salt thereof.

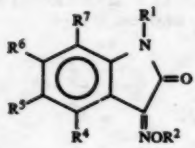
5,192,792

ISATINE DERIVATIVES, AND THEIR METHOD OF USE

Graham Johnson, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Dec. 7, 1990, Ser. No. 624,157
Int. Cl.[5] A61K 31/40; C07D 209/04, 209/56
U.S. Cl. 514—418 16 Claims

1. A method of antagonizing the biological effects of an excitatory amino acid of a subject in need of such antagonization comprising the step of administering to said subject an effective excitatory amino acid antagonizing amount of an indole-2,3-dione-3-oxime compound having the formula



and isomers thereof wherein

R^1 is hydrogen, C_{1-6}-alkyl which may be branched, C_{3-7}-cycloalkyl, benzyl, phenyl which may be substituted, acyl, hydroxy, C_{1-6}-alkoxy, CH_2CO_2R' wherein R' is hydrogen or C_{1-6}alkyl which may be branched, CH_2CN, $CH_2CONR^{IV}R^V$ wherein R^{IV} and R^V independently are hydrogen or C_{1-6}alkyl, or $CH_2C(=NOH)NH_2$;

R^2 is (1) alkenyl of from two to six carbon atoms, (2) of from two to six carbons, (3) $(CH_2)_{1-6}$ CO_2H, (4) $(CH_2)_{1-6}CONHR$ wherein R is C_{1-6}alkyl, optionally branched; aryl which is phenyl optionally substituted by one or more of lower alkyl of from one to four carbons, halogen trifluoromethyl, cyano, carboxy, alkoxycarbonyl wherein the alkoxy is of from one to four carbons, alkylthio wherein the alkyl is of from one to four carbons, nitro, acyl of from two to four carbons, hydroxy, C_{1-6}-alkoxy, CH_2CO_2R' wherein R' is hydrogen or C_{1-6}-alkyl which may be branched, CH_2CN, $CH_2CONR^{IV}R^V$ wherein R^{IV} and R^V independently are hydrogen or C_{1-6}-alkyl, optionally branched; aralkyl which is aryl as defined above attached through C_{1-4}alkyl; or SO_2R^{10} wherein R^{10} is C_{1-12}alkyl, optionally branched; aryl which is phenyl optionally substituted by ne or more of lower alkyl of from one to four carbons, halogen trifluoromethyl, cyano, NH_2, NHR^{11} wherein R^{11} is C_{1-4}alkyl, $NHCOR^{11}$ wherein R^{11} is as defined above, carboxy, alkoxycarbonyl wherein the alkoxy is of from one to four carbons, alkylthio wherein the alkyl is of from one to four carbons, nitro, acyl of from two to four carbons, hydroxy, C_{1-6}-alkoxy, CH_2CO_2R' wherein R' is hydrogen or C_{1-6}-alkyl which may be branched, CH_2CN, $CH_2CONR^{IV}R^V$ wherein R^{IV} and R^V independently are hydrogen or C_{1-6}-alkyl, optionally branched; aralkyl which is aryl as defined above attached through C_{1-4}alkyl; R^4R^5, R^6, R^7 independently are hydrogen, C_{1-6}-alkyl which may be branched, phenyl, halogen, C_{1-6}-alkoxy, NO_2, CN, CF_3, or $SO_2NR''R'''$ wherein R'' and R''' independently are hydrogen or C_{1-6}-alkyl; or R^6 and R^7 together form an additional 4- to 7-membered ring which may be aromatic or partial saturated and which may be substituted with halogen, NO_2, CF_3CN, $SO_2NR''R'''$ wherein R'' and R''' independently are hydrogen or C_{1-6}-alkyl, and R^4 and R^5 have the meanings set forth above.

5,192,793

PLANT PROTECTIVE MICROEMULSION COMPOSITION COMPRISING PYRETHROIDS

István Székely, Dunakeszi; András Szegő; Laszlo Pap, both of Budapest; Lajos Nagy, Szentendre; Viktória Kollárik née Hasek, Budapest; Katalin Mármarosi née Kellner, Biatorbágy; Zoltán Karádi, Budapest; Andrea Tóth, Solymár, and György Szucsány, Budapest, all of Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Rt., Budapest, Hungary

PCT No. PCT/HU89/00065, § 371 Date Jul. 24, 1990, § 102(e) Date Jul. 24, 1990, PCT Pub. No. WO90/06681, PCT Pub. Date Jun. 28, 1990
PCT Filed Dec. 21, 1989, Ser. No. 548,917
Claims priority, application Hungary, Dec. 22, 1988, 6558/88
Int. Cl.[5] A01N 37/34, 43/38, 53/00, 31/14
U.S. Cl. 514—421 5 Claims

1. A solution of a plant protective agent which comprises as active ingredient 1–150 g of at least one synthetic pyrethroid
as a surface active agent 40–70 g of ethoxylated (EO=1-0–14)-propoxylated (PO=18–22) nonylphenol,
10–20 g of linear calcium dodecylbenzene sulfonate, and
90–120 g of polyoxyethylene (20)-sorbitan monolaurate, and a solvent mixture in a quantity needed for 1 liter from the following (A) composition:
9–11% by volume of a hydrogenated aliphatic hydrocarbon containing 45% of naphthene,
18–30% by volume of propylene glycol,
28–35% by volume of pine fatty acid,
25–30% by volume of sunflower oil, and
5–10% by volume of a 1:1 by volume mixture of methanol or ethanol with isobutanol.

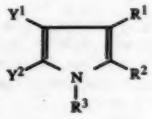
5,192,794

SUBSTITUTED 2-ARYLPYRROLES

Hermann Uhr; Albrecht Marhold, both of Leverkusen; Peter Andres; Christoph Erdelen, both of Leichlingen; Ulrike Wachendorff-Neumann, Monheim, and Wilhelm Stendel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 20, 1992, Ser. No. 886,262
Claims priority, application Fed. Rep. of Germany, May 30, 1991, 4117752
Int. Cl.[5] C07D 405/09; H01N 43/36
U.S. Cl. 514—422 9 Claims

1. Substituted 2-arylpyrroles of the general formula (I)

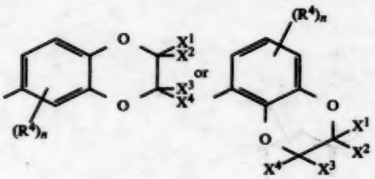


(I)

in which

R^1 represents cyano or nitro,

R^2 represents the radicals



wherein

X^1, X^2, X^3 and X^4 can be identical or different and represent hydrogen, halogen or alkyl,

R^4 represents halogen and

n represents a number from 0 to 3,

R^3 represents hydrogen, alkyl, alkenyl or alkinyl , the alkyl, alkenyl or alkinyl radicals optionally being substituted by 1 to 4 identical or different halogen atoms, C_1–C_6-alkoxy, C_1–C_6-alkylthio, C_1–C_6-acyloxy, C_2–C_6-alkoxycarbonyl, phenyl, cyano or nitro,

Y^1 represents halogen and

Y^2 represents halogen, alkyl or halogenoalkyl.

5,192,795

2-(AMINOALKYL)PYRROLEALDEHYDES, PROCESS FOR THEIR PREPARATION AND THEIR USE

Gerhard Zoller, Schöneck, and Ursula Schindler, Bad Soden, both of Fed. Rep. of Germany, assignors to Cassella Aktiengellschaft, Frankfurt am Main, Fed. Rep. of Germany

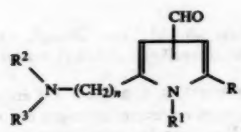
Filed Jun. 14, 1991, Ser. No. 715,120

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1990, 4020851

Int. Cl.[5] A61K *31/40;* **C07D** *207/327, 207/325*

U.S. Cl. 548—423 **16 Claims**

1. 2(Aminoalkyl)pyrrolealdehyde of the formula I



(I)

in which

R: denotes hydrogen or alkyl (C_1–C_3);

R^1: denotes hydrogen, cyanoalkyl (C_1–C_4), hydroxycarbonylalkyl (C_1–C_4), alkoxy(C_1–C_4)carbonylalkyl(C_1–C_4), $R^4(R^5)$N-carbonylalkyl-C_1–C_4), alkyl(C_1–C_6)carbonylaminoalkyl(C_1–C_4), phenylcarbonylaminoalkyl (C_1–C_4), phenoxyalkyl (C_1–C_3)-carbonyl-aminoalkyl(C_1–C_4);

R^2 and R^3: independently of one another denote hydrogen, alkyl(C_1–C_6), alkanoyl(C_1–C_6), phenylalkyl(C_1–C_4)carbonyl, phenoxyalkyl (C_1–C_3)carbonyl, benzoyl or pyridylcarbonyl;

R^4 and R^5 independently of one another denote hydrogen, or alkyl(C_1–C_4); where the phenyl, phenoxy or benzoyl substituents can also be mono- or disubstituted by halogen, alkyl(C_1–C_4), hydroxyl, alkoxy(C_1–C_4), $R^4(R^5)$N, mercapto, alkylmercapto(C_1–C_4), nitro, cyano, hydroxycarbonyl, alkoxy(C_1–C_4) carbonyl, alkoxy(C_1–C_4)carbonylalkyl(C_1–C_4), formyl or alkanoyl-(C_1–C_4);

n: denotes 1, 2 or 3;

and pharmacologically acceptable acid addition salts thereof in the case of compounds which contain a basic group.

5,192,796

Patent Not Issued For This Number

5,192,797

DERIVATIVES OF 2-AMINOALKYL-5-ARYLALKYL-1,3-DIOXANES, THEIR PREPARATION AND THEIR THERAPEUTIC APPLICATION

Bernard Raizon, Vigneux; Yannick Evanno, Paris, and Odette LeGalloudec, Morigny, all of France, assignors to Synthelabo, Paris, France

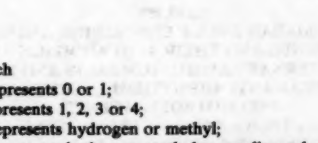
Filed Jun. 14, 1991, Ser. No. 714,182

Claims priority, application France, Jun. 15, 1990, 90 07483; Apr. 15, 1991, 91 04578

Int. Cl.[5] A61K *31/335;* **C07D** *319/06*

U.S. Cl. 514—452 **8 Claims**

1. A compound which is a 2-aminoalkyl-5-arylalkyl-1,3-dioxane of general formula (I)



(I)

in which

m represents 0 or 1;

n represents 1, 2, 3 or 4;

R_1 represents hydrogen or methyl;

R_2 represents hydrogen, methyl or an alkanoyl group of the general formula COR' in which R' represents a hydrogen atom or a linear or branched C_1–C_4-alkyl group, or an alkoxycarbonyl group of the general formula COOR" in which R" represents a linear or branched C_1–C_4-alkyl group; and

Ar represents either a phenyl group optionally carrying one or two substituents selected from halogen, C_1–C_4 alkyl, methoxy and trifluoromethyl, or a naphthalen-1-yl or naphthalen-2-yl group optionally carrying a substituent selected from halogen, methyl, methoxy and cyclopropylmethoxy groups,

in the form of a cis- or trans-stereoisomer, and in the form of a free base or a acid addition salt thereof.

5,192,798

LIPOPHILIC POLYAMINES USEFUL FOR TREATING HYPERCHOLESTEROLEMIA

James W. Aiken, Plainwell; Charles H. Spilman, and Edward W. Thomas, both of Kalamazoo, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

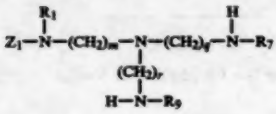
PCT No. PCT/US89/00490, § 371 Date Aug. 16, 1990, § 102(e) Date Aug. 16, 1990

Continuation-in-part of Ser. No. 158,213, Feb. 19, 1988, abandoned. This PCT application Feb. 13, 1989, Ser. No. 566,461

Int. Cl.[5] A61K *31/16*; C07C *211/18*

U.S. Cl. 514—462 10 Claims

1. A compound of formula X, below,



wherein Z_1 is

(a) —C3—C20-cycloalkyl substituted with zero or one =O, —C(O)OR11, —C(O)NH2, —CH=CH2, or ethylene ketal;

wherein R_1 is

(a) —H,

(b) —C1—C4alkyl;

wherein R_7, or R_9 is each independently

(a) —H,

(b) —C3—C20cycloalkyl substituted with zero or one =O, C(O)OR11, —C(O)NH2, —CH=CH2, or ethylene ketal,

(c) —C3—C20alkyl substituted with one =O, —C(O)OR11, —C(O)NH2, —CH=CH2, or ethylene ketal, or C=N, provided that R_7 and R_9 are not both —H. wherein R_{11} is each independently

(a) —H,

(b) —C1—C6alkyl, or

(c) —(CH2)n—NH2;

wherein n is zero to five, inclusive;

wherein m, q, or r is each independently one to three, inclusive.

6. A method of treating hypercholesterolemia in an affected patient which comprises administering to said patient an effective amount for reducing serum cholesterol in said patient of a member selected from the group consisting of the free bases and pharmaceutically acceptable salts of a compound of claim 1.

5,192,799

COUMARAN GROUP CONTAINING AMINE COMPOUNDS AND THEIR ACID ADDITION SALTS AND QUATERNARY AMMONIUM SALTS AND THE USE THEREOF AS ANTI ARRHYTHMIC AGENTS AND AS PSYCHOTROPIC AGENTS

Ikuo Tomino, Ohtake; Masaharu Ishiguro, Ohtake; Takumi Kitahara, Ohtake; Keiichi Yokoyama, Iwakuni; Joji Kamiya, Mobara; Kanji Yoshihara, Mobara; Masaaki Ishii, Mobara; Akira Mizuchi, Mobara; Kazutoshi Horikomi, Mobara; Akira Awaya, and Takuo Nakano, both of Yokohama, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

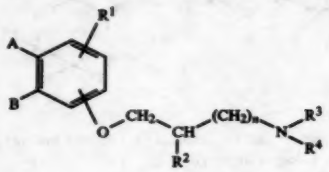
Continuation of Ser. No. 780,546, Oct. 22, 1991, abandoned, which is a continuation of Ser. No. 392,964, Aug. 3, 1989, abandoned. This application Jun. 5, 1992, Ser. No. 895,417

Claims priority, application Japan, Dec. 11, 1987, 62-312113; Dec. 14, 1987, 62-314234

Int. Cl.[5] C07D *307/80, 307/83*; A61K *31/34*

U.S. Cl. 514—469 16 Claims

1. An amine represented by the following formula (1), or its acid addition salt or its quaternary ammonium salt



(1)

wherein

A and B together form a group selected from the group of the following formulae:

—CO—CR5R6—O—,

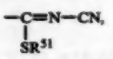
—CR13R14—CR15R16—O—and

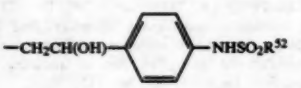
—CH(OH)—CR17R18—O—;

R^1 is hydrogen, lower alkyl, lower alkoxy, halogen, amino, nitro or lower alkylsulfamoyl;

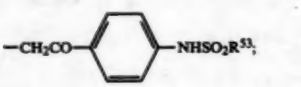
R^2 is hydrogen, hydroxyl or lower alkyl;

R^3 is hydrogen, alkyl, lower alkoxy-lower alkyl, lower alkoxy-lower alkoxy-lower alkyl, lower alkoxycarbonyl-lower alkyl, lower acyl-lower alkyl, ethylenedioxy lower alkyl, lower alkenyl, lower alkynyl, cycloalkyl, phenyl, benzyl,





or



R^4 is alkyl, lower alkenyl, lower alkynyl, lower alkoxy-lower alkyl, hydroxyalkyl, cycloalkyl, benzyl or adamantyl;

R^5, R^6, R^{13}, R^{14}, R^{15}, R^{16}, R^{17} and R^{18} are identical or different, and each represents hydrogen or lower alkyl;

R^{51}, R^{52} and R^{53} are identical or different, and each represents lower alkyl;

n is a number of 0, 1, 2, 3 or 4; and

with the proviso that when A and B, taken together, represent —CR13R14—CR15R16—O—, R^2 is hydrogen or lower alkyl.

6. A method for treatment of arrythmia in a patient in need thereof, comprising administering to said patient a pharmacologically effective amount of the compound of claim 1 as an active ingredient.

8. A method for treating psychoneurological diseases treatable with dopamine or serotonin antagonists in a patient in need thereof, comprising administering to said patient a psychoneurologically effective amount of the compound of claim 1 as an active ingredient.

5,192,800
GLUTARAMIDE DIURETIC AGENTS

Ian T. Barnish, Ramsgate; John C. Danilewicz, Ash; Keith James, Deal; Gillian M. B. Samuels, Barham; Nicholas K. Terrett; Michael T. Williams, both of Deal, and Martin J. Wythes, Dover, all of England, assignors to Pfizer Inc., New York, N.Y.

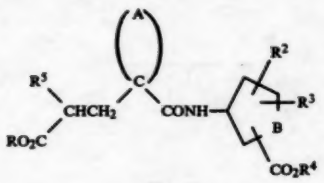
Division of Ser. No. 354,170, May 19, 1989, Pat. No. 5,030,654, which is a continuation-in-part of Ser. No. 131,157, Dec. 10, 1987, abandoned. This application May 30, 1991, Ser. No. 707,559

Claims priority, application United Kingdom, Dec. 11, 1986, 8629663; Jul. 3, 1987, 8715722

Int. Cl.[5] A61K *31/21*

U.S. Cl. 514—510 9 Claims

1. A method for treating hypertension and renal insufficiency in an afflicted subject, which comprises administering to said subject an effective antihypertensive/diuretic amount of a compound of the formula:



(I)

or a pharmaceutically acceptable salt thereof, wherein:

A completes a 5- or 6-membered saturated or monounsaturated carbocyclic ring which is optionally fused to another 5- or 6-membered saturated carbocyclic ring or is optionally benzofused;

B is $—(CH_2)_m—$ wherein is an integer of from one to two;

R and R^4 are each independently hydrogen, C_1–C_6 alkyl or benzyl, or they represent a biolabile ester-forming group other than C_1–C_6 alkyl or benzyl;

R^1 is hydrogen or C_1–C_4 alkyl;

R^2 and R^3 are each independently hydrogen, hydroxy, C_1–C_4 alkyl or C_1–C_4 alkoxy; and

R^5 is C_1–C_6 alkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, C_3–C_7 cycloalkyl, C_3–C_7 cycloalkenyl, aryl (C_2–C_6 alkynyl), $—NR^6R^7$, $—NR^8COR^9$, $—NR^8SO_2R^9$, tetrahydrofuranyl or homodioxanyl; or C_1–C_6 alkyl substituted by halogen, hydroxy, C_1–C_6 alkoxy, C_2–C_6 hydroxyalkoxy, C_1–C_6 alkoxy(C_1–C_6 alkoxy), C_3–C_7 cycloalkyl, C_3–C_7 cycloalkenyl, aryl, aryloxy, aryloxy(C_1–C_4 alkoxy), heterocyclyl, heterocyclyloxy, $—NR^6R^7$, $—NR^8COR^9$, $—NR^8SO_2R^9$, $—CONR^6R^7$, —SH, $—S(O)_pR^{10}$, $—COR^{11}$ or $—COOR^{12}$; wherein

R^6 and R^7 are each independently hydrogen, C_1–C_4 alkyl, aryl, aryl(C_1–C_4 alkyl), C_2–C_6 alkoxyalkyl, heterocyclyl or C_3–C_7 cycloalkyl optionally substituted by hydroxy or C_1–C_4 alkoxy;

R^6 and R^7, when taken together with the nitrogen atom to which they are attached, form a pyrrolidinyl, piperidino, morpholino, piperazinyl or N—(C_1–C_4 alkyl)piperazinyl group;

R^8 is hydrogen or C_1–C_4 alkyl;

R^9 is C_1–C_4 alkyl, C_1–C_4 alkoxy, trifluoromethyl, aryl, aryl(C_1–C_4 alkyl), aryl(C_1–C_4 alkoxy), heterocyclyl or $—NR^6R^7$;

R^{10} is C_1–C_4 alkyl, aryl, heterocyclyl or $—NR^6R^7$;

R^{11} is C_1–C_4 alkyl, C_3–C_7 cycloalkyl, aryl or heterocyclyl;

R^{12} is hydrogen or C_1–C_4 alkyl; and

p is zero, one or two;

said biolabile ester-forming group other than C_1–C_6 alkyl or benzyl in the definition of R and R^4 being selected from C_1–C_8 alkanoyloxy(C_1–C_8 alkyl), and the C_1–C_8 alkyl and C_3–C_7 cycloalkyl-substituted derivatives thereof and the aryl-substituted derivatives thereof, aroyloxy(C_1–C_8 alkyl), aryl, aryl(C_1–C_8 alkyl) and halo(C_1–C_8 alkyl), wherein said aryl groups are phenyl, naphthyl or indanyl with said aryl groups being optionally substituted with halogen, C_1–C_4 alkyl or C_1–C_4 alkoxy groups;

said aryl groups in the definition of R^5, R^6, R^9, R^{10} and R^{11} having up to ten carbon atoms the nuclear ring, with said groups being optionally substituted with halogen, hydroxy, cyano, trifluoromethyl, C_1–C_4 alkyl, C_1–C_4 alkoxy, carbamoyl, amino, mono- or di(C_1–C_4 alkyl)amino or C_1–C_4 alkanoylamino groups; and

said heterocyclyl groups in the definition of R^5 being pyridyl, pyrazinyl, pyrimidinyl, pyridazinyl, pyrrolyl, imidazolyl, pyrazolyl, triazolyl, tetrazolyl, furanyl, tetrahydrofuranyl, tetrahydropyranyl, dioxanyl, thienyl, oxazolyl, isoxazolyl, thiazolyl, indolyl, isoindolinyl, quinolyl, quinoxalinyl, quinazolinyl and benzimidazolinyl, with said groups being optionally substituted with halogen, hydroxy, oxo, C_1–C_4 alkyl, benzyl, carbamoyl, amino, mono- or di(C_1–C_4 alkyl)amino or C_1–C_4 alkanoylamino groups.

5,192,801
3-[2-CYANO-2-HALO-ETHENYL]-2,2-DIMETHYL-CYCLOPROPANECARBOXYLATES

Didier Babin, Montigny; Marc Benoit, Roquevaire; Jean-Pierre Demoute, Neuilly Plaisance, and Jean Tessier, Vincennes, all of France, assignors to Roussel Uclaf, Paris, France

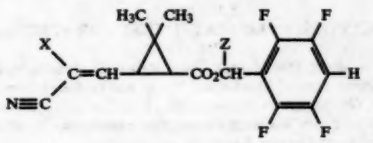
Division of Ser. No. 661,383, Feb. 26, 1991, Pat. No. 5,135,951. This application Feb. 20, 1992, Ser. No. 839,093

Claims priority, application France, Feb. 27, 1990, 90-02406

Int. Cl.[5] A01N *37/34*; C07C *255/39, 255/31*

U.S. Cl. 514—521 16 Claims

1. All stereoisomeric forms and mixtures thereof of a compound of the formula



I$_A$

wherein the cyclopropane copula has (1R, cis) or (1R, trans) structure, the geometry of the double bond carried by the 3-carbon atom is (E) or (Z), X is halogen, Z is hydrogen.

5,192,802
BIOADHESIVE PHARMACEUTICAL CARRIER

William F. Rencher, Devon, Pa., assignor to McNeil-PPC, Inc., Milltown, N.J.

Filed Sep. 25, 1991, Ser. No. 766,493

Int. Cl.[5] A61K *9/02, 9/06, 47/00*; A61L *15/03*

U.S. Cl. 514—535 14 Claims

1. A teething gel consisting essentially from about 5 to 10% benzocaine; 5 to 20% NaCMC; an agent selected from the group consisting of 5 to 20% xanthan gum and 10 to 20% sodium alginate and a diluent selected from the group consisting of polyethylene glycol and polyethylene glycol with glycerine wherein the percentages are by percent weight of the teething gel and optionally there may be added to said teething gel an effective amount of a pharmaceutically acceptable excipient selected from the group consisting of acidifying agents, antimicrobial preservatives, antioxidants, buffering agents, colorings, flavors, sweetener and mixtures thereof.

5,192,803

SULFENYLATED CARBAMIC ESTERS AND THEIR USE IN PESTICIDES

Friedrich Karrer, Zofingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

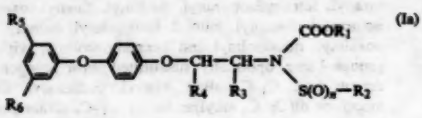
Continuation-in-part of Ser. No. 508,149, Apr. 11, 1990, abandoned. This application Jun. 24, 1991, Ser. No. 719,870

Claims priority, application Switzerland, Apr. 14, 1989, 1422/89

Int. Cl.[5] A61K *31/325*; C07C *309/32*, *321/16*, *381/14*

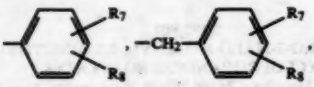
U.S. Cl. 514—539 10 Claims

1. A compound of the formula Ia



(Ia)

where R_1 is C_1–C_4alkyl or C_3–C_4alkenyl, R_2 is C_1–C_4alkyl or a radical of the formula



—$C(CH_3)_2$—CN or —$N(R_9)$—COO—C_1–C_4alkyl, R_3 and R_4 independently of one another are hydrogen or methyl, R_5 is fluorine or chlorine, R_6 is fluorine when R_5 is fluorine or is hydrogen when R_5 is chlorine, R_7 and R_8 independently of one another are hydrogen, halogen, C_1–C_4alkyl, C_1–C_4alkoxy or nitro, R_9 is C_1–C_4alkyl and n is zero, one or two.

5,192,804

CARNITINE-SUPPLEMENTED DIET FOR STARTER PIGS

Stephen A. Blum, Des Moines, Iowa; Robert D. Goodband; Jim L. Nelssen, both of Manhattan, Kans., and G. Larry Newton, Tifton, Ga., assignors to Lonza Inc., Fair Lawn, N.J.; Kansas State University Research Foundation, Manhattan, Kans. and University of Georgia Research, Athens, Ga.

Continuation of Ser. No. 673,986, Mar. 22, 1991, abandoned. This application Jun. 22, 1992, Ser. No. 905,149

Int. Cl.[5] A61K *35/78*; A01N *37/30*; A23K *1/18*

U.S. Cl. 514—554 12 Claims

1. A feed composition for starter pigs weighing up to 16 pounds and as young as fourteen days which comprises at least 5 ppm of L-carnitine in admixture with a high nutrient density diet containing at least 30% milk products suitable for feeding to starter pigs, between 5 to 15% added fat, and at least 15% protein.

5,192,805

USE OF ACETYL L-CARNITINE IN THE THERAPEUTIC TREATMENT OF COMA

Claudio Cavazza, Rome, Italy, assignor to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A., Rome, Italy

Filed Jan. 3, 1992, Ser. No. 816,224

Claims priority, application Italy, Jan. 4, 1991, 91 000002

Int. Cl.[5] A61K *31/205*

U.S. Cl. 514—556 4 Claims

1. A therapeutical method for the treatment of coma which comprises parenterally administering to a subject in a coma an amount of acetyl L-carnitine or a pharmacologically acceptable salt thereof effective for arousing the patient from coma.

5,192,806

METHOD OF PREVENTING PENILE TISSUE DEGENERATIVE CHANGE

Johannes Pill, Leimen; Johannes Aufenanger, Hirschberg; Thomas Konrad, Neckargemünd/Dilsberg, and Klaus-Peter Jünemann, Mannheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Fed. Rep. of Germany

Filed Apr. 15, 1991, Ser. No. 684,740

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1990, 90121343; PCT Int'l Appl., Dec. 22, 1990, PCT/EP90/02299

Int. Cl.[5] A61K *31/195*

U.S. Cl. 514—562 12 Claims

1. A method of preventing or reducing degenerative changes in penile tissue in a patient in need of such prevention or reduction, said method comprising administering to said patient an effective amount of at least one TXA_2 receptor antagonist.

5,192,807

SIDEROPHORES AS ANTIPARASITIC AGENTS

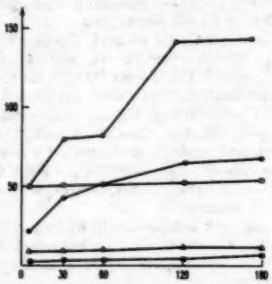
Jurg Gysin; Yves Crenn, both of Cayenne; Luiz Pereira da Silva, and Catherine Breton, both of Paris, all of France, assignors to Institut Pasteur, Paris Cedex, France

Continuation of Ser. No. 372,370, Jul. 21, 1989, abandoned. This application Sep. 19, 1991, Ser. No. 762,086

Claims priority, application France, Oct. 2, 1987, 87 13623

Int. Cl.[5] A01N *37/18*

U.S. Cl. 514—563 3 Claims



1. A method of killing *Plasmodium falciparum*, comprising administering to a man or an animal in need thereof an effective amount of an antiparasitic composition containing a siderophore substance with at least one hydroxamate group, which is able to penetrate red blood cells infected with *Plasmodium falciparum* and which is obtained by the method comprising:

bacterial synthesis of said siderophore substance by a pathogenic enterobacteria *Klebsiella pneumoniae* of serotype K5 cultivated in an iron-depleted medium,

isolating a siderophore substance excreted by said bacteria from the supernatant of the culture by introducing said supernatant in an anion exchange chromatographic column, followed by elution with a chloride gradient,

collecting the fractions containing hydroxamate groups, and gel filtration of the pool of hydroxamate fractions collected by the ion exchange chromatography, followed by elution with an appropriate buffer.

5,192,808

THERAPEUTIC EFFECT OF L-DEPRENYL IN THE MANAGEMENT OF PITUITARY-DEPENDENT HYPERADRENOCORTICISM (CUSHING'S DISEASE)

William W. Ruehl, Overland Park; David S. Bruyette, Manhattan, and David Stevens, Overland Park, all of Kans., assignors to Deprenyl Animal Health, Inc., Overland Park, Kans.

Continuation-in-part of Ser. No. 643,452, Jan. 18, 1991, which is a continuation-in-part of Ser. No. 576,011, Aug. 31, 1990, Pat. No. 5,151,449. This application Mar. 27, 1992, Ser. No. 858,702

Int. Cl.[5] A61K *31/135*

U.S. Cl. 514—654 7 Claims

1. A method of treating Cushing's disease, said method comprising:

administering a small but Cushing's disease treating effective amount of the compound L-deprenyl, or a biologically active salt form thereof, to an affected individual for a time sufficient to result in remission of Cushing's disease.

5,192,809

PROCESS FOR RECLAIMING A THERMOSET POLYMER

C. Andrew Jones, Newtown Square; Anne M. Gaffney, West Chester; David W. Leyshon, West Chester; Glenn E. Cozzone, West Chester, and John A. Sofranko, West Chester, all of Pa., assignors to ARCO Chemical Technology, L.P., Wilmington, Del.

Filed Mar. 30, 1992, Ser. No. 860,638

Int. Cl.[5] C08L *101/00*

U.S. Cl. 521—40 33 Claims

1. A process for reclaiming a filled thermoset polymer comprising the steps of:

(a) Contacting particles of the polymer and a zeolite-containing particulate catalyst in a fluidized bed reaction zone at a temperature effective to produce a coarse filler component, coke, a volatile organic component, and a spent catalyst component;

(b) Withdrawing a first stream comprising the volatile organic component from the reaction zone;

(c) Withdrawing a second stream comprising spent catalyst, coke, and the coarse filler component from the reaction zone;

(d) Heating the second stream in a regeneration zone in the presence of oxygen at a temperature effective to convert the coke to carbon dioxide and water and to regenerate the catalyst; and

(e) Separating the regenerated catalyst and coarse filler component.

5,192,810

METHOD AND APPARATUS FOR MANUFACTURING DIMPLED STRUCTURES FROM ELASTIC CLOTH

Francis U. Hill, San Diego, Calif., assignor to Sorrento Engineering Corporation, Calif.

Division of Ser. No. 702,952, May 20, 1991, Pat. No. 5,135,959. This application Dec. 16, 1991, Ser. No. 807,189

Int. Cl.[5] C08J *9/38, 9/40*

U.S. Cl. 521—52 2 Claims

1. A reticulated open-cell polyimide foam product which comprises:

a reticulated open-cell foam sheet having at least 90 volume percent open space and containing a finely divided microwave absorbing material; and

a polyimide foam substantially filling said open space, said polyimide foam having substantially uniform density and cell size.

5,192,811

PROCESS FOR PREPARING A FLAME-RESISTANT, ELASTIC SOFT POLYURETHANE FOAM

Ulrich Heitmann, Memmingen, and Heribert Rossel, Buxheim, both of Fed. Rep. of Germany, assignors to Metzeler Schaum GmbH, Memmingen, Fed. Rep. of Germany

Filed Mar. 27, 1991, Ser. No. 676,198

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1990, 4010752

Int. Cl.[5] C08K *21/00;* C08G *18/14*

U.S. Cl. 521—99 6 Claims

1. A process for preparing a flame-resistant, elastic soft polyurethane foam, which comprises admixing a portion of expanded graphite having a particle size of from 0.2 to 1 mm as a flame retardant and a portion of melamine, with a foam reaction mixture of polyol, polyisocyanate, water, organic blowing agents, activators, accelerators and cross-linking agents, whereby the expanded graphite and the malamine are added in a ratio of from 1:3 to 2:3, adjusting a combined proportion of expanded graphite and melamine to equal from 20 to 40% by weight of the reaction mixture.

5,192,812

CELL OPENERS FOR URETHANE FOAM SURFACTANTS

David D. Farris; James D. Reedy, both of Marietta, Ohio, and Raymond L. Cobb, Buda, Tex., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Feb. 12, 1991, Ser. No. 654,232

Int. Cl.[5] C08J *9/04;* C08G *18/06;* C08F *203/00*

U.S. Cl. 521—112 15 Claims

1. A composition, comprising:

a first silicone polyether copolymer in which the copolymer backbone possesses at least 20 Si—O—Si linkages, more than 50% of the Si atoms carry at least two methyl groups, and the sum of the atomic masses of the oxyethylene units and the oxypropylene units constitute at least 50% of the average molecular weight of the copolymer; and

a second silicone polyether copolymer, said second polyether copolymer having the generalized formula

$$(Me_3SiO_{1/2})_\alpha(Me_2SiO_{2/2})_\beta(MeSiO_{3/2})_\gamma(RMeSiO_{2/2})_\delta(R^2MeSiO_{2/2})_\epsilon(RMe_2SiO_{1/2})_\zeta$$

wherein

$\alpha+\zeta=\gamma+2$;

$\alpha=0$ to $\gamma+2$;

$\beta=10$ to 180;

$\gamma=0$ to 15;

$\delta=1$ to 40;

$\epsilon=0$ to 20;

$\zeta=0$ to $\gamma+2$;

$\delta+\zeta\geq 2$;

$\Sigma(\alpha+\beta+\gamma+\epsilon+\zeta)\geq 20\leq 200$; and

R is a polyether of formula $-(CHR')_nO(C_2H_4O)_x(C_2H_3R''O)_zQ$ or a mixture thereof, wherein

n is 2 to 10;

$x+z=5$ to 40;

$$\frac{x}{x+z}\geq 0.04;$$

and with the proviso that

when $z=0$, $x\leq 18$; and wherein

R' is H, alkyl of 1 to 3 carbon atoms, phenyl, or alkyl-substituted phenyl in which the alkyl substituents contain 1 to 2 carbon atoms, and where there are several R' groups, these may be the same or different;

R'' is alkyl of 1 to 18 carbon atoms, phenyl, or alkyl-substituted phenyl in which the alkyl substituents contain 1 to 4 carbon atoms;

Q is selected from the group consisting of:
H;
alkyl of 1 to 18 carbon atoms;
benzyl;
alkyl-substituted benzyl in which the alkyl substituents contain 1 to 4 carbon atoms;
CO_2R^2 in which R^2 is alkyl of 1 to 2 carbon atoms;
$CONHR^3$ in which R^3 in alkyl of 1 to 3 carbon atoms, phenyl, or alkyl-substituted phenyl in which the alkyl substituents contain 1 to 4 carbon atoms;
COR^4 in which R^4 is alkyl of 1 to 18 carbon atoms, phenyl, or alkyl-substituted phenyl in which the alkyl substituents contain 1 to 4 carbon atoms; atoms,
R^5 is alkyl of 2 to 18 carbon atoms, phenyl, phenyl-substituted alkyl of 2 to 3 carbon atoms, or cyano- or fluoro-substituted alkyl of 2 to 18 carbon atoms;
the ratio of hydrophilic character to lipophilic character for the second silicon polyether copolymer being ≥ 0.3;
the weight % of polyether groups in said second silicon polyether copolymers being at least 5% less than the weight % of polyether groups in said first silicone polyether copolymer; and
said second silicone polyether copolymer constituting from about 0.05% to about 40% of the sum of said first and second silicone polyether copolymers.

5,192,813

PREPARATION OF HARD FOAMS CONTAINING URETHANE GROUPS OR URETHANE AND ISOCYANURATE GROUPS BY POLYISOCYANATE POLYADDITION, AND POLYOXYALKYLENE-POLYOLS WHICH ARE SUITABLE THEREFOR

Rolf Henn, 3 Lilienweg, 6834 Ketsch; Werner Hinz, 1 Hanns-Fay-Str., 6710 Frankenthal; Ludwig Schuster, 44 Weinheimer Str., 6703 Limburgerhof, and Klaus Vorspohl, 1 Ruedigerstr., 6700 Ludwigshafen, all of Fed. Rep. of Germany

Filed May 2, 1991, Ser. No. 694,621

Claims priority, application Fed. Rep. of Germany, May 10, 1990, 4014923

Int. Cl.[5] C08G *18/32, 18/48;* C08J *9/08, 9/12*

U.S. Cl. 521—159 **7 Claims**

1. A process for the preparation of a hard foam containing bonded urethane groups or containing bonded urethane and isocyanurate groups comprising by reacting
a) at least one polyhydroxyl compound, and,
b) optionally, a low-molecular-weight chain extender and-/or crosslinking agent with
c) an organic and/or modified organic polyisocyanate, in the presence of
d) a blowing agent,
e) a catalyst
and optionally,
f) assistants and/or additives,
wherein the polyhydroxyl compound (a) used is a polyoxypropylenepolyol or a polyoxyethylene-polyoxypropylenepolyol containing up to 30% by weight, based on the weight of the alkylene oxide units, of oxyethylene units bonded within the chain, containing secondary hydroxyl groups,
having a functionality of from 3.5 to 4.3,
a hydroxyl number of from 350 to 650 and
a viscosity of from 500 to 2,500 mPa.s at 23° C., and prepared by anionic polymerization of 1,2-propylene oxide or ethylene oxide and 1,2-propylene oxide onto an initiator molecule mixture containing, based on the total weight,
a1) from 40 to 80% by weight of a hexanetetrol,
a2) from 1 to 30% by weight of a hexanetriol,
a3) from 0 to 35% by weight of glycerol and
a4) from 0 to 15% by weight of sorbitol or mannitol, or a mixture thereof.

5,192,814

REACTION INJECTION MOLDING POLYUREA RESIN COMPOSITION

Toshiyuki Oshima, Ibaraki; Hideo Ishibashi, Neyagawa; Rie Tamura, Toyonaka; Satoshi Yamamoto, Hirakata, and Takaharu Izumo, Shimamoto, all of Japan, assignors to Nippon Paint Company, Ltd., Osaka, Japan

Filed Apr. 29, 1992, Ser. No. 875,764

Claims priority, application Japan, Apr. 30, 1991, 3-128419

Int. Cl.[5] C08G *18/14*

U.S. Cl. 521—163 **7 Claims**

1. A reaction injection molding polyurea resin composition comprising
(a) a polyoxyalkylenepolyamine,
(b) an aromatic polyamine and/or a xylylenediamine, and
(c) a polyisocyanate,
said polyoxyalkylenepolyamine (a) or polyamine (b) is an at least partially secondary amino-terminated modified polyamine such that either the whole or part of (a) and/or (b) has been modified by a Michael reaction with an unsaturated compound of the formula $CH_2{=}C(R){-}Y$ wherein R means a hydrogen atom or a methyl group and Y means an electron attracting group with the proviso that R cannot represent methyl when the polyamine is an aromatic polyamine.

5,192,815

DENTAL RESTORATIVE MATERIAL

Koichi Okada, and Ikuo Omura, both of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

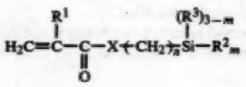
Filed Nov. 2, 1989, Ser. No. 430,331

Claims priority, application Japan, Nov. 11, 1988, 63-286404

Int. Cl.[5] A61F *2/00;* C08J *5/10;* C08K *3/36;* C08L *33/12*

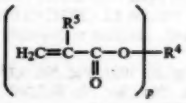
U.S. Cl. 523—115 **10 Claims**

1. A dental restorative material comprising:
(a) an ultrafine inorganic filler with a size of 0.1 μm or less which is insoluble in water and surface-treated with a silane coupling agent represented by the following general formula (I) in an amount of at least 3% by weight based on the weight of the filler:



(I)

wherein R^1 is a hydrogen atom or a methyl group, R^2 is a hydrolyzable group, R^3 is a hydrocarbon group having 1 to 6 carbon atoms, X is an oxygen or sulfur atom, m is 2 or 3 and n is an integer of 8 to 20; and
(b) a (meth)acrylate monomer composition containing at least 50% by weight based on the weight of the composition of at least one hydrophobic multifunctional (meth)acrylate represented by the following general formula (II)



(II)

wherein R^4 is an organic group having 7 to 40 carbon atoms, composed of 1 to 8 hydrocarbon groups having 2 to 40 carbon atoms, at least one of said hydrocarbon groups having at least 4 carbon atoms, the ratio of the number of total carbon atoms, x, contained in the hydrocarbon groups to the number of the hydrocarbon groups, y, contained in said organic group satisfying: $x/y > 3$; R^5 is a hydrogen atom or a methyl group and p is an integer of 2 to 8;

wherein said surface-treated inorganic filler is incorporated in an amount of at least 100 parts by weight based on 100 parts by weight of said monomer composition.

5,192,816

PIPE INNER SURFACE COATING COMPOSITION

Hiroshi Iizuka, Sodegaura, Japan, assignor to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Nov. 27, 1991, Ser. No. 799,133
Claims priority, application Japan, Nov. 29, 1990, 2-331502
Int. Cl.[5] C08L *63/00*
U.S. Cl. 523—463 **7 Claims**

1. A coating composition for forming a film on the inner surface of a pipe through which chlorine-containing water passes, the film coating when cured absorbing or consuming no more than 1 part per million chlorine, the coating composition comprising:

(A) an epoxy resin containing at least 90% by weight of a bisphenol glycidyl ether, the epoxy resin containing epoxy groups;

(B) an aliphatic polyamine compound sufficient to provide 0.5 to 0.9 equivalent of active hydrogen per equivalent of the epoxy group of said epoxy resin;

(C) about 3 to about 20 parts by weight per 100 parts by weight of the sum of components (A) and (B) of at least one member selected from the group consisting of 1-xylyl-1,3-diphenyl-butane, bis(α-methylbenzyl)xylene and 1-xylyl-1-(3-α-methyl-benzylphenyl)ethane; and

(D) at least one member selected from the group consisting of a coloring pigment and an inorganic filler.

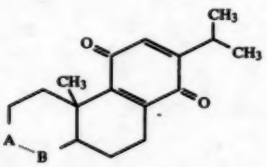
5,192,817

PHENANTHRENE DERIVATIVES

Yoshihisa Takaishi, Tokushima; Kiyoto Goto, Naruto; Takuji Uesako, Tokushima; Toshiko Kuwahara, Tokushima; Masaaki Takai, Tokushima; Yukihisa Ono, Tokushima; Yoshihiro Taniguchi, Tokushima; Sachiko Manabe, Tokushima, and Takahiro Asakuni, Kagawa, all of Japan, assignors to Otsuka Pharmaceutical Co., Ltd. and Otsuka Pharmaceutical Factory, Inc., both of Japan

PCT No. PCT/JP91/00289, § 371 Date Nov. 5, 1991, § 102(e) Date Nov. 5, 1991, PCT Pub. No. WO91/13855, PCT Pub. Date Sep. 19, 1991
PCT Filed Mar. 5, 1991, Ser. No. 775,973
Claims priority, application Japan, Mar. 6, 1990, 2-056184
Int. Cl.[5] C07C *49/215, 50/32;* C07D *307/77*
U.S. Cl. 549—298 **8 Claims**

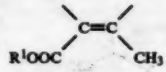
1. A phenanthrene derivative selected from the group consisting of compounds represented by the general formula (1),



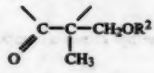
(1)

wherein the group of the formula

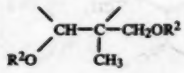
is a group of the formula



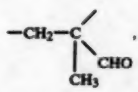
wherein R^1 is a hydrogen atom or a lower alkyl group, a group of the formula



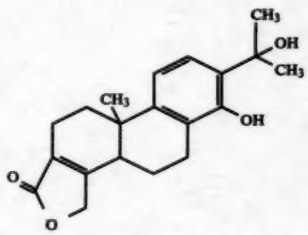
wherein R^2 is a hydrogen atom or a lower alkanoyl group, a group of the formula



wherein R^2 is the same as defined above, a group of the formula

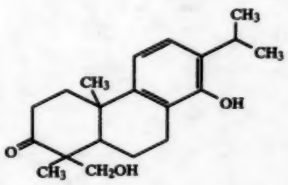


a compound of the formula (2),



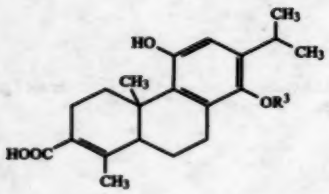
(2)

a compound of the formula (3),



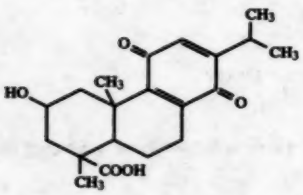
(3)

compounds represented by the general formula (4),



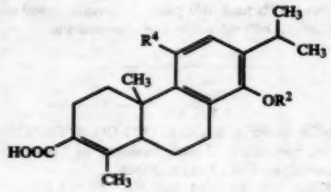
(4)

wherein R^3 is a hydrogen atom or a methyl group, a compound of the general formula (7),



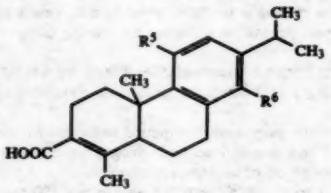
(7)

compounds represented by the general formula (8),



(8)

wherein R^2 is the same as defined above and R^4 is a lower alkanoyloxy group,
or compounds represented by the general formula (9),



(9)

wherein R^5 and R^6 are each a lower alkoxy group, or a salt thereof.

8. An interleukin-1 (IL-1) inhibitor containing, as active ingredient(s), phenanthrene derivative(s) selected from the group consisting of compounds represented by the general formulas (1), (4), (8) and (9) and the formulas (2), (3) and (7) as defined in claim 1 or salt(s) thereof.

5,192,818

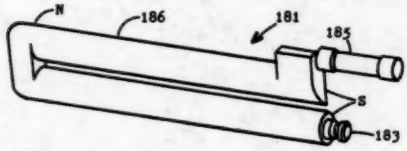
MEANS FOR REDUCING THE CRIMINAL USEFULNESS OF HAND WEAPONS

John M. Martin, 316 Roosevelt St., Lafayette, La. 70501

Continuation-in-part of Ser. No. 188,646, May 2, 1988, abandoned, which is a continuation-in-part of Ser. No. 880,095, Jun. 30, 1986, abandoned, which is a continuation-in-part of Ser. No. 589,773, Mar. 15, 1984, abandoned. This application Jul. 18, 1990, Ser. No. 553,555

Int. Cl.[5] F41A *17/08, 17/30*

U.S. Cl. 42—70.01 4 Claims



1. An apparatus comprising:

a dischargeable hand weapon;

means, connected to said weapon, for preventing the discharging of said weapon

means for detecting a condition necessary for using said weapon for a use which involves the moving of said weapon;

first determining means, connected to said detecting means, for determining the existence of a requirement where more than one hour has past since said detecting means detected said condition;

second determining means, connected to said detecting means and to said first determining means, for determining the existence of a second requirement where less than thirty minutes has past since said detecting means detected said condition while said first determining means was determining the existence of said first requirement; and

means, connected to said second determining means and to said preventing means for disabling said preventing means, and thereby allowing the discharging of said weapon, when said second determining means is determining the existence of said second requirement.

5,192,819

BULK EXPLOSIVE CHARGER

Otto F. Baumgartner, P.O. Box 351, Elkford, British Columbia, Canada V0B 1H0

Filed Jun. 11, 1992, Ser. No. 897,078

Claims priority, application Canada, Jun. 11, 1991, 2044311

Int. Cl.[5] F42B *3/00*

U.S. Cl. 86—20.15 14 Claims

1. An apparatus for loading bulk explosives into a cylindrical blast hole comprising:

a pressure charger vessel adapted to be filled with bulk explosives and pressurized with compressed air;

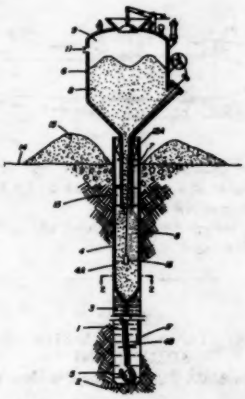
at least one water impervious cylindrical flexible sleeve adapted to be lowered into a blast hole and connected to said pressure charger vessel;

said flexible sleeve including an irregular outer surface with recessions and projections; said projections adapted to abut inner walls of said blast hole;

a pressure means adapted to convey pressurized air into said pressure charger vessel and said sleeve; and

a conveying means adapted to convey bulk explosives into said pressure charger vessel;

wherein, when in operation, pressurized air is conveyed into said pressure charger vessel, and said sleeve is expanded to substantially fill said blast hole, said sleeve is filled with bulk explosives and pressurized air, simultaneously forcing any water in of said blast hole and said recessions on the outer surface of said sleeve, thereby permitting said sleeve to be



filled with explosives to the desired level, while preventing said explosives from being contaminated with water.

5,192,820

MUSICAL INSTRUMENT KEYBOARD STRIKING FORCE SENSOR

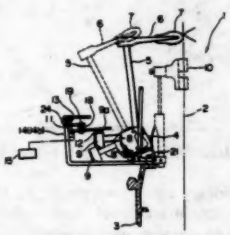
Kiyoshi Kawamura, and Shigeru Muramatsu, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Filed Jun. 28, 1991, Ser. No. 722,685

Claims priority, application Japan, Jun. 28, 1990, 2-170590

Int. Cl.[5] G10C *3/18*

U.S. Cl. 84—236 12 Claims



1. A key striking force sensor including:

(a) displacement measuring means for continuously measuring displacement of a component of a hammer mechanism over an entire range of motion, the component moving in concert with the hammer mechanism; and

(b) calculation means for calculating velocity or acceleration of movement of the hammer mechanism based on displacement data from the displacement measuring means.

5,192,821

MOUTHPIECE FOR A SINGLE-REED WOODWIND INSTRUMENT

Bradley Goldstein, 110 Longwood Ave., Brookline, Mass. 02146, and Martin Goldstein, 87-10 204th St. Apt A-28, Hollis, N.Y. 11423

Filed Nov. 14, 1990, Ser. No. 612,799

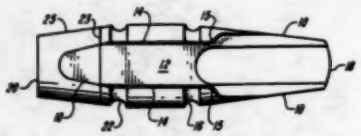
Int. Cl.[5] G10D *9/02*

U.S. Cl. 84—383 R 17 Claims

1. A single-reed woodwind mouthpiece assembly including a proximal tip portion and a distal chamber portion, said mouth-

piece assembly having enhanced vibrational quality, stability, and response comprising:

a lay disposed in at least said proximal tip portion, upon which a reed rests when said reed is in playing position;



a reed groove including reed groove walls extending upward from at least a portion of said lay for limiting transverse slippage of the reed; and

reed holding means for maintaining the reed in playing position within said reed groove.

5,192,822

HIGH HAT STAND PEDAL INITIAL HEIGHT ADJUSTMENT

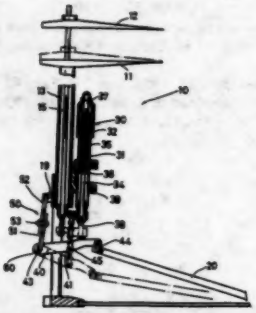
Yoshiki Hoshino, Asahi, Japan, assignor to Hoshino Gakki Co., Ltd., Japan

Filed Jun. 26, 1991, Ser. No. 721,276

Claims priority, application Japan, Feb. 26, 1991, 3-16669[U]

Int. Cl.[5] G10D *13/00*

U.S. Cl. 84—422.3 **13 Claims**



1. A high hat stand with an adjustable height operating pedal comprising:

a stand; a stationary cymbal supported by the stand to be contacted; a movable cymbal movable into contact with and away from the stationary cymbal;

an operating rod connected with the movable cymbal, the operating rod being movable for moving the movable cymbal toward the stationary cymbal; biasing means for normally biasing the movable cymbal away from the stationary cymbal;

a foot pedal connectable with the operating rod, the pedal being movable in one direction to move the operating rod to move the movable cymbal to contact the stationary cymbal, and the biasing means also biasing the pedal opposite the one direction;

connecting means for connecting the pedal to the operating rod, the connecting means comprising a pedal initial height adjusting member connected between the pedal and the stand, the adjusting member having a selectively adjustable length for setting the initial height of the pedal while the movable cymbal is separated from the stationary cymbal and before the operator moves the pedal to move the movable cymbal into contact with the stationary cymbal.

5,192,823

MUSICAL TONE CONTROL APPARATUS EMPLOYING HANDHELD STICK AND LEG SENSOR

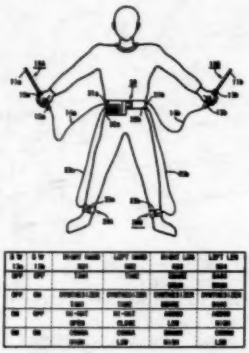
Hideo Suzuki, and Masao Sakama, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Filed Oct. 4, 1989, Ser. No. 417,788

Claims priority, application Japan, Oct. 6, 1988, 63-252377

Int. Cl.[5] G10H *5/02*

U.S. Cl. 84—600 **8 Claims**



1. A musical tone control apparatus comprising:

(a) a stick having a shape which can be held by a person's hand, said stick being provided with a first sensor and at least one switch, said first sensor detecting a physical parameter accompanied with a spatial displacement of said stick to be moved with a free motion of a person's arm;

(b) detecting means to be mounted to a person's leg, said detecting means being provided with a second sensor for detecting a physical parameter accompanied with a spatial displacement of said detecting means in any of plural directions moved with a free ranging motion of the person's leg;

(c) musical tone generation control means for generating first and second musical tone generation control signals for controlling generation of musical tones which are respectively assigned to said stick and said detecting means based on detection results of said first and second sensors; and

(d) tone control means for generating a tone color control signal for independently controlling tone colors of the musical tones, whose generation are controlled by said first and second musical tone generation control signals, in response to an operation of said switch.

5,192,824

ELECTRONIC MUSICAL INSTRUMENT HAVING MULTIPLE OPERATION MODES

Takeo Shibukawa, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Dec. 20, 1990, Ser. No. 631,475

Claims priority, application Japan, Dec. 21, 1989, 1-331882

Int. Cl.[5] G10H *1/00, 1/06, 7/00*

U.S. Cl. 84—615 **25 Claims**

1. An electronic musical instrument comprising:

a) performance data generating means for generating performance data;

b) multiple musical tone generating systems for producing musical tone signals in response to said performance data;

c) multiple musical sound producing systems to which said musical tone signals are supplied and which produce musical sound in response to said musical tone signals;

d) mode indicating means for indicating:

i) a first mode wherein musical sound is generated in response to operation of one of said musical tone generating systems,

ii) a second mode wherein musical sound is generated in response to operation of at least two musical tone generating systems;

e) selections means for:

i) allocating the performance data output from said performance data generating means to a single musical tone generating system when the mode indicated by said mode indicating means is said first mode,

ii) allocating the performance data output from said performance data generating means to each of said multiple musical tone generating systems when the mode indicated by said mode indicating means is said second mode;

f) distribution means for:

i) supplying to at least one of said multiple musical sound producing systems the musical tone signal output from the signal musical tone generating system to which said performance data is allocated when the mode indicated by the mode indicating means is said first mode,

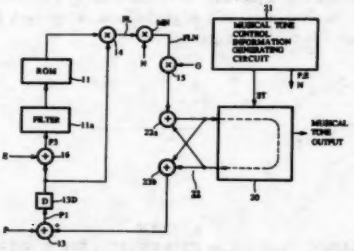
ii) supplying to each of said multiple musical sound producing systems the musical tone signal output from a corresponding musical tone generating system when the mode indicated said mode indicating means is said second mode, such that each musical tone signal is supplied to a difference musical sound producing system.

5,192,825

APPARATUS FOR SYNTHESIZING MUSICAL TONES

Toshifumi Kunimoto, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Apr. 25, 1990, Ser. No. 514,112
Claims priority, application Japan, Apr. 27, 1989, 1-108699
Int. Cl.[5] G10H *1/12*
U.S. Cl. 84—661 **7 Claims**



1. An apparatus for synthesizing musical tones comprising;

means for providing performance information corresponding to at least one parameter of a tone to be synthesized;

excitation means for generating an excitation signal in response to performance information and a feedback signal;

delay means for delaying the excitation signal in accordance with a transmission characteristic corresponding to the performance information, wherein an output of the delay means is provided as the feedback signal to the excitation means to form a loop circuit for circulating the excitation signal, wherein the circulated excitation signal is used as a musical tone signal;

noise generation means for generating a noise signal; and

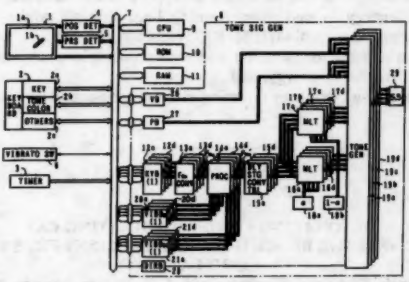
noise combining means contained in the loop circuit for combining the circulated excitation signal with the noise signal separate from the performance information, thereby causing the musical tone signal to have a noise component.

5,192,826

ELECTRONIC MUSICAL INSTRUMENT HAVING AN EFFECT MANIPULATOR

Elichiro Aoki, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Dec. 31, 1990, Ser. No. 636,209
Claims priority, application Japan, Jan. 9, 1990, 2-2093
Int. Cl.[5] G10H *1/02*
U.S. Cl. 84—737 **13 Claims**



1. An electronic musical instrument comprising:

manipulation means including an at least two dimensional continuous surface manipulation region, and a positioning element operative proximate said continuous surface of said manipulation region for achieving performance manipulation within said manipulation region;

means for detecting time based serial position data coordinates on the basis of serial positioning of the performance manipulation of said positioning element within said manipulation region;

means for detecting directional change and for conversion of data pertaining to a determination of the geometric coordinate locus of the performance manipulation, on the basis of a predetermined number of time based, serially detected position data coordinates; and

a tone signal generation circuit for performing effect control on musical tones based on the detected position and directional change and conversion data from said means for detecting and said manipulation means.

5,192,827

MICROWAVE PROJECTILE

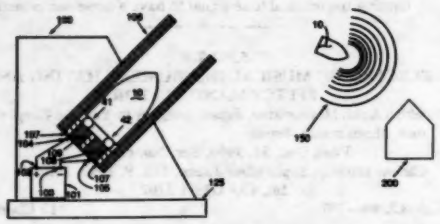
Louis J. Jasper, Jr., Fulton, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 19, 1991, Ser. No. 810,608
Int. Cl.[5] F42B *12/36*
U.S. Cl. 89—1.11 **7 Claims**

1. A microwave radio frequency radiation projectile system for radiating a single pulse of high power microwave/radio frequency (HPM/RF) energy comprising a projectile comprising a body with a portion of said body transparent to microwave/radio frequency radiation thereby allowing microwave/radio frequency energy to propagate through said portion of said body, means for generating high power microwave/radio frequency energy, means for radiating high power microwave/radio frequency energy, means for storing electrical energy, means for charging said projectile with

electrical energy prior to launching, and means for launching said projectile wherein said system further comprises:

a plurality of pulse forming lines for storing said electrical energy,



a subnanosecond switch for converting said stored electrical energy in said pulse forming lines to high power microwave/radio (HPM/RF) frequency energy,

an antenna for radiating said high power microwave radio frequency energy, and

a timing circuit for initiating said subnanosecond switch.

5,192,828

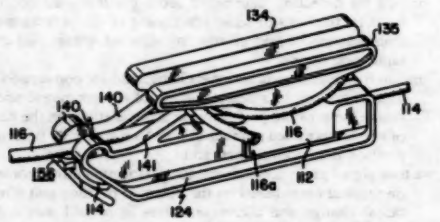
DETONATING CORD AND BLASTING CAP CONNECTOR BLOCK HAVING A RESILIENT FREE END CORD LATCH

Dennis K. Austin, Simsbury, and J. Donaldson Thomas, East Granby, both of Conn., assignors to The Ensign-Bickford Company, Simsbury, Conn.

Filed Mar. 13, 1992, Ser. No. 851,045

Int. Cl.[5] F42B *3/26*; C06C *5/00*

U.S. Cl. 102—275.12 **3 Claims**



1. An elongated connector block for mounting an elongated blasting cap and a detonating cord in side-by-side association for side initiation, comprising a longitudinally extending body of generally U-shaped transverse cross section with an intermediate longitudinally extending slot the full length thereof and a pair of opposed sides forming the sides of the slot contoured to receive the detonating cord, said body providing an enlarged elongated blasting cap cavity extending longitudinally from a front end of the body along at least a portion of said slot, an upward integral extension of at least one side of the body forming a pinch-cleat for longitudinally positioning a flexible detonating cord along the slot in intimate parallel side-by-side association with and above a blasting cap inserted in said cavity and for retaining the detonating cord in said position by winding it about the pinch-cleat extension, the space between said one pinch-cleat extension and said body having a flexible retainer clip positioned therein for retaining the free end of the detonating cord after winding the cord about the cleat.

5,192,829

INITIATION DEVICE FOR THE PROPULSIVE CHARGE OF AMMUNITION, FOR EXAMPLE TELESCOPED AMMUNITION, AND AMMUNITION IGNITED BY SUCH AN IGNITION DEVICE

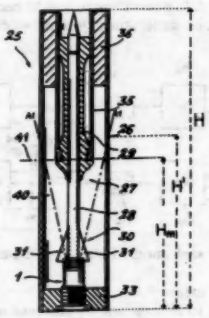
Christian G. Suire, Bourges, France, assignor to Giat Industries, France

Filed Jan. 23, 1992, Ser. No. 824,320

Claims priority, application France, Jul. 31, 1991, 91 09725

Int. Cl.[5] F42B *5/045*

U.S. Cl. 102—434 **1 Claim**



1. A telescoped ammunition cartridge, comprising:

a cartridge casing;

a projectile and propellant charge disposed within said cartridge casing; and

an ignition device disposed at an aft end of said cartridge casing, said ignition device comprising:

(i) a cylindrical case having an end wall and a longitudinal axis; and

(ii) a pyrotechnic composition and ignition means for igniting said pyrotechnic composition housed within said cylindrical case, said cylindrical case including a plurality of angled channels in said end wall for providing flame communication between said pyrotechnic composition and said propellant charge, each of said angled channels having a central axis angled relative to said longitudinal axis such that said central axis intersects said casing at a point beyond a mid-point of said casing wherein said projectile includes a plurality of fins at an aft section of said projectile; and

support means for supporting said fins, said support means comprising a plurality of recesses in the end wall of said cylindrical case, said angled channels opening between said fins of said projectile.

5,192,830

SABOT FOR HIGH DISPERSION SHOT SHELL

Lawrence J. Puckett, Churchville, Md., assignor to The United States of America as represented by the Secretary of The Army, Washington, D.C.

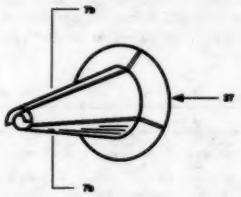
Division of Ser. No. 828,321, Jan. 29, 1992. This application Aug. 21, 1992, Ser. No. 931,469

Int. Cl.[5] F42B *7/02*, *14/06*

U.S. Cl. 102—457 **4 Claims**

1. A sabot for a shotgun shell, said sabot comprising a tubular portion and a base, wherein said tubular portion attaches to

said base forming a cup-like member for launching a load of shot, and said base is provided with a centrally disposed recess



which protrudes into said load of shot, said recess being defined by an involute surface resembling a cone.

5,192,831

STRUCTURE OF FLOOR JUNCTION BOX

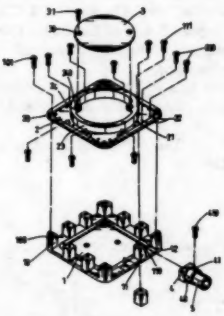
Chin-Hui Yang, 4F., No. 2, Lane 409, Chung Cheng Road, Hsin Tien City, Taipei Hsien, Taiwan

Filed Jan. 30, 1991, Ser. No. 647,885

The portion of the term of this patent subsequent to Mar. 31, 2009, has been disclaimed.

Int. Cl.[5] H02G *3/28*

U.S. Cl. 174—48 **1 Claim**



1. A floor junction box, comprising:

a square base having sector columns at the four corners thereof, a plurality of recesses around the four sides thereof between said sector columns, a plurality of square columns respectively releasably fastened in said recesses defining with said sector columns a plurality of wiring holes therebetween;

a square cover plate secured to said sector and square columns by screw means at the top, having bolt holes around the four sides thereof respectively disposed above said wiring holes, a circular flange at the center defining therein an opening;

a top cap secured to said circular flange by screw means to cover over said opening;

a plurality of connectors fastened in said wiring holes and respectively secured in position by screw means fastened in said bolt holes on said square cover, having each a tubular connecting end for fastening a wire conduit, said tubular connecting end having a bolt hole through which screw means can be fastened to secure said wire conduit in position; and

wherein a plurality of inserts can be used to block up said wiring holes when said connectors are removed therefrom, said inserts having each a flange at one side which is stopped at the outside of said wiring holes to completely seal the gap when inserted.

5,192,832

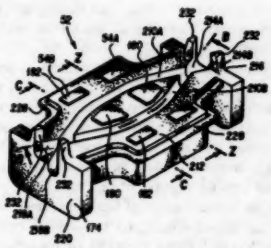
ELECTROMAGNET INSERT FOR DATA CURRENT COUPLER

William J. Rudy, Jr., Annville, and Howard R. Shaffer, Millersburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 31, 1990, Ser. No. 576,335

Int. Cl.[5] H05K *5/00*; H01F *7/00*

U.S. Cl. 174—52.1 **11 Claims**



1. An electromagnet insert for a data coupler for coupling to a twisted pair cable of a data bus, comprising a dielectric member including means defined therein for receipt of at least one electromagnet and defining positions for at least a central leg of said electromagnet with a mating face exposed in one direction along a surface, said member having a pair of arcuate wire-receiving channels along a wire-receiving face and coursing from a first common wire exit at one side to a second common wire exit at an opposing side of said member defining pathways on each side of a central leg of said electromagnet, said arcuate channels adapted to receive thereinto from said wire-receiving face respective ones of wires of said twisted pair calbe, and shaped to conform to the shape of an open loop of the twisted pair calbe, said dielectric member having a periphery of said wire-receiving face including a flexible lip to form a seal when engaged and compressed between opposed surfaces.

5,192,833

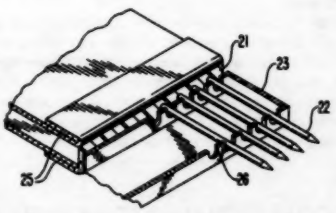
ASSEMBLY FOR TERMINATING A CABLE AND PROCESSES FOR MANUFACTURE AND TERMINATION THEREOF

Rowland W. Gibson, Newark, Del., assignor to W. L. Gore & Associates, Inc., Newark, Del.

Filed Jul. 17, 1991, Ser. No. 731,575

Int. Cl.[5] H02G *15/02*

U.S. Cl. 174—74 R **7 Claims**



1. An assembly for terminating a cable comprising:

(a) at least one center conductor surrounded by insulating material and having a segment of said insulating material stripped from the end of said conductor;

(b) a supporting tray, including at least one set of alignment slots formed across the width of said tray, said tray positioned adjacent said insulating material to support said at least one center conductor lying in one of the slots in the

at least one set of alignment slots, said tray being of a width to leave a portion of said at least one center conductor extending unsupported by said one slot outwardly past the outermost edge of said tray; and

(c) an easily-removable hardenable reinforcing material surrounding said at least one center conductor in said one slot in said tray.

4. A process for preparing an assembly for terminating a cable having at least one center conductor surrounded by insulating material, comprising the steps of:

(a) stripping a segment of said insulating material from the end of said cable having at least one center conductor surrounded by insulating material;

(b) positioning a support tray, including at least one set of alignment slots formed across the width of said tray, said tray positioned adjacent said insulating material to support said at least one center conductor lying in one of the slots in the at least one set of alignment slots, said tray being of a width to leave a portion of said at least one center conductor extending unsupported by said one slot outwardly past the outermost edge of said tray; and

(c) applying and allowing to harden an easily-removable hardenable reinforcing material surrounding said at least one center conductor in said one slot of said tray to affix said at least one center conductor in place in said one slot in said tray.

5,192,834

INSULATED ELECTRIC WIRE

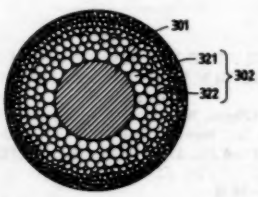
Toru Yamanishi; Tatsuya Kakuta, both of Kanagawa, and Akinori Mori, Tochigi, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 492,794, Mar. 13, 1990. This application Dec. 9, 1991, Ser. No. 803,954

Claims priority, application Japan, Mar. 15, 1989, 1-60881; Apr. 17, 1989, 1-95371; May 1, 1989, 1-109141; Aug. 4, 1989, 1-201405

Int. Cl.[5] H01B 7/00

U.S. Cl. 174—120 SR **4 Claims**



1. An insulated electric wire, comprising:

a conductor;

an energy radiation curable resin composition layer having microspheres incorporated therein and surrounding said conductor, the outside diameter of said microspheres in said energy radiation curable resin composition layer being maximum in the vicinity of said conductor and decreasing gradually toward the periphery of said energy radiation curable resin composition layer.

5,192,835

BONDING OF SOLID STATE DEVICE TO TERMINAL BOARD

David N. Bull, Rochester; Edward J. Ozimek, Penfield, and Terry Tarn, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 9, 1990, Ser. No. 594,786

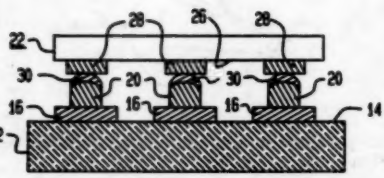
Int. Cl.[5] H05K 1/00

U.S. Cl. 174—260 **19 Claims**

1. A solid state device assembly comprising:

a pattern of conductive bumps only on a surface of a terminal board of an insulating material;

a solid state image sensor device which has features which cannot withstand high temperatures and which has a plurality of conductive terminals pads on a surface thereof in a pattern corresponding to the pattern of the conductive bumps on the terminal board, the solid state image sensor device terminal pads being over and adjacent the terminal board conductive bumps; and



a hardened amalgam between each of the conductive bumps and its corresponding solid state image sensor device terminal pad bonding the solid state image sensor device to the terminal board.

5,192,836

APPARATUS FOR SELECTING AN ELEVATOR CAR FOR PHYSICALLY HANDICAPPED PERSONS FROM A GROUP OF ELEVATORS WITH IMMEDIATE ALLOCATION OF TARGET CALLS

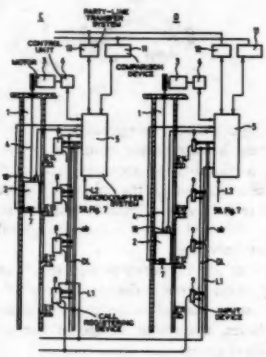
Joris Schroder, deceased, late of Luzcerne, Switzerland by Irmgard Schröder-Müller, heiress , assignor to Inventio AG, Hergiswil, Switzerland

Filed Feb. 4, 1991, Ser. No. 651,748

Claims priority, application Switzerland, Feb. 5, 1990, 00357/90

Int. Cl.[5] B66B 1/20

U.S. Cl. 187—126 **8 Claims**



8. An apparatus for the selection of a elevator car for use by physically handicapped persons from a group of elevators, the elevators of the group having immediate allocation of target calls, including call registering and indicating devices which are located on the floors served by the elevators and each including a keyboard for the input of calls for desired target floors, a floor call memory for each elevator car of the group and connected with the call registering and indicating devices wherein a call identifying the input floor and a call identifying the target floor are stored in the floor call memories upon actuation of one of the call registering and indicating devices by the input of a call on a floor, a load memory for each elevator car for storing a number of the persons present in the respective elevator car for each floor, a travelling time mem-

ory for each elevator car for storing travel times between floors, a comparison device for each elevator car, and a computer for each elevator car forming the floor call memory, the load memory, the travelling time memory and the comparison device wherein the computer computes operating costs corresponding to the waiting times of passengers from data specific to the elevator, and an operating costs register formed by the computer with an allocation memory connected to the floor call memory, wherein the operating costs for the elevators are compared one with the other by the comparison device and the call concerned is allocated to that elevator which has the smallest operating costs through entry of an allocation instruction into the allocation memory and wherein the elevator concerned and its position are indicated immediately after the call allocation on an indicating field of the actuated call registering and indicating device, comprising:

a switching circuit for each elevator car of an elevator group and for each floor served by the elevator car connected at inputs with a load memory and a second memory portion of a floor call memory which stores calls for target floors;

a first comparator having an output connected to an input of said switching circuit, said first comparator having inputs connected to an output of a travelling time memory and an output of an additional memory, wherein the times needed by physically handicapped persons for travelling the paths between the respectively actuated call registering and indicating devices and the shaft doors of the elevators of the elevator group are stored in said additional memory;

said switching circuit being connected at an output with a switching device connected between an operating costs register and a comparison device wherein, in the absence of an alighting call in the second memory portion and for a load which is smaller than a load limit value as well as for a travelling time of the elevator car which is greater than the time needed by a physically handicapped person to travel from the actuated call registering and indicating device to the shaft door of the elevator concerned, said switching device is actuated by said switching circuit and the elevator car is enabled to participate in the operating costs comparison; and

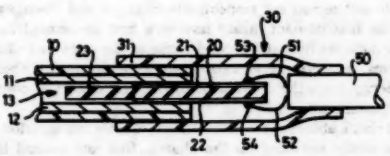
an additional key provided on the keyboards of the call registering and indicating devices and connected for activating said switching circuit associated with a floor.

5,192,837

OBSTACLE DETECTOR SYSTEM INCLUDING AN IMPROVED CONNECTION ASSEMBLY

Jérôme Chardon, Courbevoie, France, assignor to Jaeger, France

Filed Jun. 4, 1990, Ser. No. 532,595
Int. Cl.[5] H01H *3/16*
U.S. Cl. 200—61.41 **24 Claims**



1. A system for detecting an obstacle interposed between an electrically-driven motor vehicle window and an associated frame, the system being of the type comprising an obstacle detector device including a flexible and deformable elongate body made of electrically insulating material provided with at least two electrically conductive tracks held apart at rest by resilient flexible means, wherein the system further includes a connection assembly comprising:

a support core made of electically insulating material;

at least two separate electrically conductive elements carried by the support core and intended to make contact with respective ones of the tracks when the core is interposed between them; and

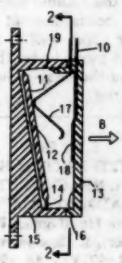
envelope means comprising a heat shrinkable sleeve suitable for engaging the outside surface of the obstacle detector device in order to clamp said obstacle detector device against the support core and its electrically conductive elements in order to maintain electrical contact between the tracks and these elements and also in order to seal the detector device, wherein the support core extends inside the detector device beyond its electrically conductive elements in the form of an insert of electrically insulating material which prevents the clamping effect of the envelope means from bringing the tracks into contact with each other.

5,192,838

FRONTAL IMPACT CRUSH ZONE CRASH SENSORS

David S. Breed, 270 Hillcrest Rd., Boonton Township, Morris County, N.J. 07005, and Anthony S. Pruszenski, Jr., Plum Island, Mass., assignors to David S. Breed, Boonton Township, Morris County, N.J.

Filed Feb. 15, 1990, Ser. No. 480,257
Int. Cl.[5] H01H *35/14*
U.S. Cl. 200—61.45 R **14 Claims**



1. A frontal impact crash senior mounted in the crush zone of a vehicle for sensing crashes and deploying an occupant protection apparatus, comprising:

(a) a sealed housing, said housing formed from at least two members and containing a chamber therein, said housing having a thickness in the sensing direction less than both its height and width;

(b) a sensing mass within said housing chamber movable relative to said housing from a first at rest position to a second actuating position in response to a velocity change of said housing of sufficient magnitude to require the deployment of occupant protection apparatus;

(c) a narrow passageway between said sensing mass and said housing, said passageway substantially surrounding said sensing mass;

(d) damping means to dampen the motion of said sensing mass from said first at rest position to said actuating position, said damping means comprising the flow of a fluid through said passageway;

(e) biasing means within said housing to bias said sensing mass toward said first at rest position; and

(f) means responsive to the motion of said mass to initiate an occupant protection apparatus.

5,192,839

ACCELERATION SENSOR

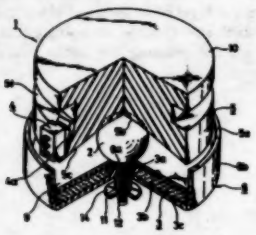
Noritoshi Imade, Fujisawa, and Katsuyasu Ono, Chigasaki, both of Japan, assignors to NSK Ltd., Tokyo, Japan

Filed Dec. 20, 1991, Ser. No. 811,225

Claims priority, application Japan, Dec. 26, 1990, 2-404876[U]

Int. Cl.[5] H01M 35/14

U.S. Cl. 200—61.45 R 12 Claims



1. An acceleration sensor comprising:

a spherical inertia element having a predetermined mass;

a plate-like member defining a retainer hole on which the inertia element is allowed to rest and is retained until a predetermined acceleration is applied to the inertia element;

a switch change-over member for changing over a switch in response to movement of the inertia element from the retainer hole to an upper wall of the plate-like member upon application of the predetermined acceleration;

a rod slidably inserted in the retainer hole; and

a biasing member for biasing the rod toward the inertia element resting on the retainer hole;

whereby, when the inertia element has moved from the retainer hole to the upper wall of the plate-like member, the rod is caused to move under the biasing force of the biasing member and the retainer hole is closed by a free end portion of the rod.

5,192,840

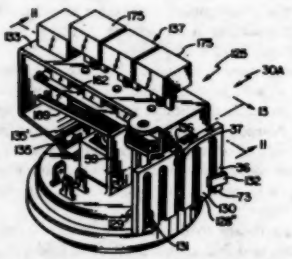
PRESSURE OPERATED SWITCH HOUSING MEMBER WITH EXTERNAL BRACKET STRUCTURE FOR ADJUSTABLE

William J. Kaigler, North Huntingdon, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 479,957, Feb. 14, 1990, Pat. No. 5,109,144. This application Jan. 6, 1992, Ser. No. 817,453

Int. Cl.[5] H01H 35/26

U.S. Cl. 200—83 R 5 Claims



1. In a housing member for a pressure operated switch construction, said housing member having an external surface means and forming a housing means for carrying an electrical switch unit and a diaphragm assembly and a compression spring means that is operatively associated with said switch unit and said diaphragm assembly to control the operation thereof in relation to the compressive setting of said compression spring means, said housing member having a bracket member extending outwardly from said external surface means thereof in a flange-like manner and having first means for interconnecting a first movable actuator means to said housing member that is operatively associated with said compression spring means to select the desired compressive setting thereof, the improvement wherein said bracket member has second means for interconnecting with a bracket that carries a second movable actuator means that is operatively associated with said compression spring means to select the desired compressive setting thereof whereby said bracket is only used with said housing means when said housing means is to carry a second movable actuator means and said bracket member is not used for interconnecting said first movable actuator means to said housing means.

5,192,841

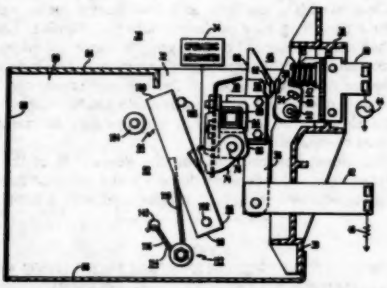
CIRCUIT BREAKER WITH SHOCK ABSORBING MECHANISM

Stanislaw A. Milianowicz, Monroeville; Edward J. Klimek, Jeannette, and Robert N. Krevokuch, West Newton, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 6, 1991, Ser. No. 788,700

Int. Cl.[5] H01H 3/60

U.S. Cl. 200—288 8 Claims



1. A circuit breaker comprising a chassis; electrical contact means insulatively supported by the chassis, with the electrical contact means including pivotable first electrical contact means and relatively stationary second electrical contact means; means for pivoting the first electrical contact means between closed and open positions in which the first and second contact means are respectively engaged and disengaged, with the first contact means having a first movement range which includes first and second limits at the open and closed positions, respectively; and shock absorbing means for absorbing energy from the movement of the first electrical contact means, characterized by:

said shock absorber means including at least one metallic bar pivotally mounted on the chassis, first and second limit means which respectively establish first and second limit positions for the pivotable movement of said metallic bar, with the first and second limit means defining a second movement range having a portion which overlaps a portion of said first movement range, and bias means biasing the metallic bar towards the second limit position of the second movement range,

whereby the first electrical contact means, during movement to the open position thereof, strikes the metallic bar, removing kinetic energy from the first electrical contact and pivoting the metallic bar against the first limit means.

5,192,842

MICROWAVE OVEN HAVING ROTATABLE TRAY WHICH MOVES UP AND DOWN DURING ROTATION

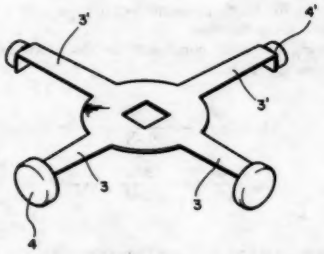
Yung H. Kim, Suweon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed May 16, 1991, Ser. No. 701,065

Claims priority, application Rep. of Korea, May 16, 1990, 90-6549[U]; May 16, 1990, 90-7010[U]

Int. Cl.[5] H05B 6/78

U.S. Cl. 219—10.55 F 10 Claims



1. In a microwave oven comprising a cooking chamber having a floor; microwave generating means for supplying microwaves to said cooking chamber; and a tray disposed within said cooking chamber carrying food to be cooked; the improvement comprising:

a rotation member including a body mounted at its center in said cooking chamber for rotation about an upright axis, and a plurality of rollers freely rotatably mounted to said body and arranged to ride upon said floor;

said tray being seated upon said rotation member; and

drive means for rotating said rotation member and said tray about said upright axis;

a radial spacing of at least one of said rollers from said upright axis being different than that of at least one other of said rollers, and said one roller having a larger diameter than said other roller, whereby said tray is inclined relative to horizontal during rotation.

5,192,843

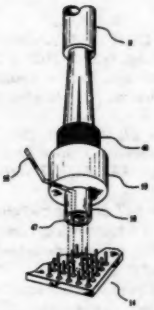
PIN ATTACHMENT TOOL AND METHOD OF CAPACITIVE BRAZING

Robert A. Cargnel, Export, and James R. Morran, Apollo, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Mar. 14, 1991, Ser. No. 669,649

Int. Cl.[5] B23K 1/00

U.S. Cl. 219—56.22 17 Claims



1. A method for replacing a damaged pin, separated near its base from the substrate in a module for an integrated circuit assembly including at least one circuit device mounted on a circuitized substrate, with a new pin, said method comprising,

(a) locating a terminal portion of a ribbon of brazing alloy above and in close proximity to said base,

(b) matingly locating undamaged pins in said module to position the head of said new pin above said terminal portion of said ribbon,

(c) establishing an electrically conductive path from said ribbon to one terminal of a power supply,

(d) establishing an electrically conductive path from said new pin to the other terminal of said power supply,

(e) maintaining the head of said new pin and said terminal portion of said ribbon at a distance insufficient to fire a capacitive charge stored in said power supply, and,

(f) decreasing said distance so as to fire said charge, while leaving said old base out of the circuit for firing said charge,

whereby said ribbon is melted, brazing the head of said new pin to said old base without damaging said integrated circuit.

5,192,844

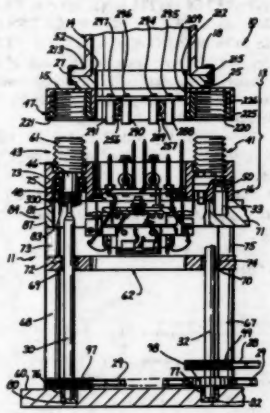
ROBOTIC TOOL ADAPTOR APPARATUS

Thomas Todd, and Todd B. Skinner, both of San Diego, Calif., assignors to Toddco General, Inc., San Diego, Calif.

Filed Feb. 19, 1991, Ser. No. 657,563

Int. Cl.[5] B23K 3/03; B23Q 3/155

U.S. Cl. 219—85.16 18 Claims



1. A tool adaptor for coupling a robotic controlled tool to a robotic unit, said adaptor comprising:

coupling means disposed intermediate the tool and the robotic unit;

means defining a centrally disposed cavity in said coupling means for helping to facilitate supplying power to the tool;

means defining a robotic power passageway between the robotic unit and said means defining a cavity for permitting source power supplied through the robotic unit to be interconnected to the tool;

means defining a tool power passageway between the tool and said means defining a cavity for permitting source power supplied through the robotic unit to be interconnected to the tool;

fastening means for attaching said coupling means intermediate the tool and the robotic unit;

means for mounting said fastening means to said coupling means, wherein said means defining a cavity is disposed intermediate said means for mounting;

wherein said coupling means includes tool coupling means secured to the tool for helping to couple electrical power

to the tool, robotic couplings means for supporting from above said tool coupling means, said robotic coupling means being adapted to be secured to the robotic unit, and engaging means partially disposed in said robotic coupling means and partially disposed in said tool coupling means for securing matingly removably together said robotic coupling means and said tool coupling means;

wherein said robotic coupling means including means defining a large centrally disposed opening, said opening being sufficiently large to receive therein a plurality of electrical conductors, and said tool coupling means including another large centrally disposed opening, said other opening being sufficiently large to receive therein a plurality of electrical conductors;

wherein said coupling means further includes connector means for coupling electrical power between the robotic unit and the robotic controlled tool;

wherein said coupling means further includes means for mounting said connector means within said cavity; and

wherein said means for mounting includes a robotic coupled printed circuit board having a group of downwardly depending electrical connectors adapted to be coupled to the robotic unit and a tool coupled printed circuit board having a group of upwardly depending electrical connectors adapted to be coupled to the robotic controlled tool.

5,192,845

PROCESS AND DEVICE FOR AUTOMATIC DETERMINATION OF PARAMETERS FOR PROCESS CONTROL SYSTEMS WITH UNKNOWN TRANSFER BEHAVIOR, IN PARTICULAR FOR PROCESS CONTROL SYSTEMS FOR RESISTANCE SPOT WELDING

Helmut Kirmsse, and Ludger Wesselmann, both of Berlin, Fed. Rep. of Germany, assignors to Innovationsgesellschaft für Fortgeschrittene-Produktionssysteme in der Fahrzeugindustrie mbH, Berlin, Fed. Rep. of Germany

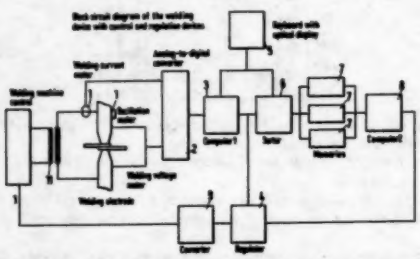
PCT No. PCT/DE90/00803, § 371 Date Jul. 26, 1991, § 102(e) Date Jul. 26, 1991, PCT Pub. No. WO91/06392, PCT Pub. Date May 16, 1991

PCT Filed Oct. 21, 1990, Ser. No. 721,425

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1989, 3936329

Int. Cl.[5] B23K *11/24*

U.S. Cl. 219—110 **6 Claims**



1. A method of determining nominal value functions for a plurality of command variables to be applied as actual values to a regulator for controlling a process over time, which process produces a plurality of output parameters to be maintained within selected limits, each command variable falling into one of at most three categories including, category c where the command variable produces an optimum process result, category a where the command variable produces too small a result and represents a negative deviation from the optimum result and b where the command variable produces too large a result and represents a positive deviation from the optimum result, the method comprising:

applying the command variable to the regulator to control the process and produce the output parameters over time;

sorting and storing each command variable over time into one of the categories;

finding a mean value function $F_i(t)$ over time for the command variables stored in each category;

finding standard deviations $S_c(t)$, $S_b(t)$ and $S_a(t)$ over time for the command variables stored in each category;

applying the mean value function of the category c command variable to the regulator as the nominal value function for that command variable;

inputting the mean value and standard deviation functions of all categories into a computer for determining weighing functions for each command variable according to computing rules as follows:

determining for each command variable, two evaluation functions $Q_1(t)$ as:

$$Q_{ac} = \frac{|d_1(t)| - [S_c(t) + S_a(t)]}{|d_1(t)|}$$

$$Q_{bc} = \frac{|d_2(t)| - [S_c(t) + S_b(t)]}{|d_2(t)|}$$

wherein $d_1(t)$ and $d_2(t)$ are respective distances between mean value functions of categories a and b from category c;

determining for both evaluation functions amounts of each weighing function $W_i(t)$ as:

$$|W_i(t)| = 1/(G_o - G_u) \cdot Q_i(t) - G_u/(G_o - G_u),\ G_u < Q_i(t) < G_o$$
$$|W_i(t)| = 1/(G_o - G_u) \cdot Q_i(t) - G_u/(G_o - G_u),\ Q_i(t) > G_o$$
$$|W_i(t)| = 0/(G_o - G_u) \cdot Q_i(t) - G_u/(G_o - G_u),\ Q_i(t) < G_u$$

wherein G_o is an upper limit of $Q_i(t)$; G_u is a lower limit of $Q_i(t)$ and i is ac or bc;

selecting a weighing function for each command variable which, in terms of amount, is least at everypoint in time, over the time of the process;

determining a sign of each weighing function according to:

$$\frac{W_i(t)}{|W_i(t)|} = \frac{d_1(t)}{|d_1(t)|} = \frac{d_2(t)}{|d_2(t)|}$$

wherein at $\frac{d_1(t)}{|d_1(t)|}$ not equal to $\frac{d_2(t)}{|d_2(t)|}$

$W_i(t)$ is zero; and

using the weighing functions for each command variable to produce a nominal value function for each command variable for application to the regulator.

5,192,846

EQUIPMENT FOR DRILLING AND/OR CLOSING OFF BY LASER THE SEAL WELD HOLE OF A FUEL ROD

Dominique Duthoo, Romans, France, assignor to Societe Franco-Belge de Fabrication de Combustibles-FBFC, Paris, France

Filed Sep. 27, 1991, Ser. No. 766,747

Claims priority, application France, Oct. 8, 1990, 90 12362

Int. Cl.[5] B23K *26/00*

U.S. Cl. 219—121.63 **6 Claims**

1. Equipment for one of drilling and closing off a seal weld hold in a fuel rod with a laser beam, comprising:

a housing for focusing a laser beam, said housing including:

an outlet arm; and

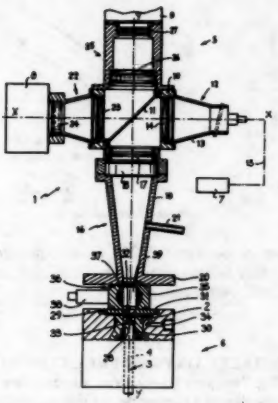
a pipe connected to said outlet arm for supplying a pressurized gas to said outlet arm;

an enclosure having:

a window for admitting the laser beam into the enclosure;

a passage for receiving said fuel rod and for positioning said fuel rod therein to face said window; and

a sealing means for sealing said passage; and



a stop valve interposed between and sealing an end flange of said outlet arm of said housing and said window of said enclosure.

5,192,847

NOZZLE FOR A TOOL FOR WORKING MATERIAL

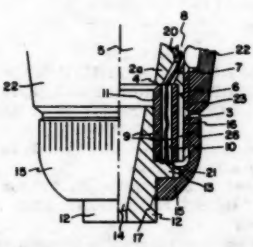
Manfred Jagiella, Karlsruhe; Wolf Wiesemann, Gaggenau, and Michael Holzmann, Rastatt, all of Fed. Rep. of Germany, assignors to C.A. Weidmuller GmbH & Co., Detmold, Fed. Rep. of Germany

Filed Sep. 6, 1991, Ser. No. 755,658

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1990, 4028338

Int. Cl.[5] B23K *26/00*

U.S. Cl. 219—121.6 17 Claims



1. A nozzle for a tool for working material, with an electrically conducting nozzle body (2), at the tip of which a nozzle electrode (12) electrically insulated from it is secured using an electrically conducting cap element (15) which is in engagement with the nozzle body (2), wherein the cap element (15) accommodates the nozzle electrode (12) and presses against the latter and wherein the cap element (15) and the nozzle electrode (12) are insulated from one another by means of an electrically nonconducting layer.

5,192,848

LASER MACHINING CELL

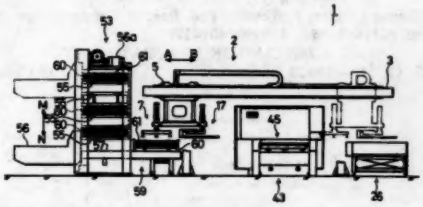
Naoomi Miyakawa, Gifu; Kazuyuki Toda, Aichi; Yukiyasu Nakamura, Inazawa; Minoru Tashiro, Gifu; Yoshihisa Yamaoka, Saki, and Isao Kuwayama, Aichi, all of Japan, assignors to Yamazaki Mazak Kabushiki Kaisha, Japan

Filed Oct. 31, 1991, Ser. No. 786,082

Claims priority, application Japan, Oct. 31, 1990, 2-294578; Oct. 31, 1990, 2-294579; Oct. 31, 1990, 2-294580; Nov. 9, 1990, 2-305413

Int. Cl.[5] B23K *26/02*

U.S. Cl. 219—121.82 7 Claims



1. A laser machining cell, comprising:

a stock means for stocking a plurality of raw workpieces, one or more than one laser processing machines,

a putting means for putting machined said workpieces thereon, and

a carrying means for carrying said workpiece from said stock means to said laser processing machine and from said laser processing machine to said putting means.

5,192,849

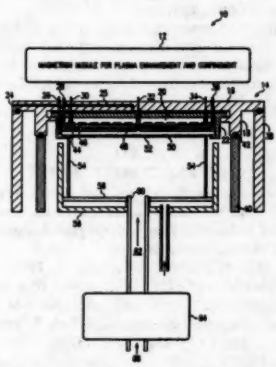
MULTIPURPOSE LOW-THERMAL-MASS CHUCK FOR SEMICONDUCTOR PROCESSING EQUIPMENT

Mehrdad M. Moslehi, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 10, 1990, Ser. No. 565,765

Int. Cl.[5] B23K *9/00*

U.S. Cl. 219—121.43 25 Claims



1. A multipurpose low-thermal-mass chuck for semiconductor processing equipment for plasma-enhanced processing of semiconductor wafers, comprising a stacked multi-layered structure of:

a vacuum base plate for providing vacuum seal and mechanical support;

a coolant module layer for extracting heat from the semiconductor wafer;

a heating element layer adjoining said coolant module for

heating said semiconductor wafer said heating element layer comprising a thin film resistor; and

a radio-frequency plate for associating an electromagnetic radio frequency power source with the semiconductor wafer.

5,192,850

PROCESS AND CIRCUIT FOR REGULATING WELDING CURRENT AND POWER AS A FUNCTION OF WELDING SPEED

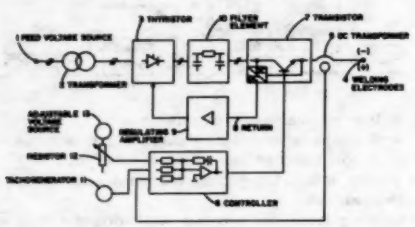
Rainer Brünn, Essel, and Wolfan Klebl, Isernhagen, both of Fed. Rep. of Germany, assignors to Kabelmetal Electro GmbH, Hanover, Fed. Rep. of Germany

Filed Apr. 11, 1991, Ser. No. 683,995

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1990, 4011647; May 4, 1990, 4014275

Int. Cl.[5] B23K *9/095, 26/00*

U.S. Cl. 219—130.21 **18 Claims**



18. A circuit for a DC arc-welding system for continuous longitudinal-seam welding, comprising;

a transformer being connectable to a voltage source;

welding electrodes connected to said transformer to be supplied from said voltage source;

a thyristor/rectifier arrangement disposed between said transformer and said electrodes for controlling and rectifying welding current;

a controller having an output for controlling said thyristor/-rectifier arrangement;

a welding-speed-dependent tachogenerator for developing a voltage in accordance with the welding speed along a longitudinal seam, said voltage being connected to an input of said controller; and

a series-connected transistor unit disposed between said thyristor/rectifier arrangement and said electrodes, said series-connected transistor unit being driven by the output of said controller and providing an output for controlling the thyristor/rectifier arrangement.

5,192,851

CORED ELECTRODE WIRES

Horace S. B. James, North Balwyn, and Ian E. French, Semaphore Park, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organization and Welding Industries Limited, Australia

Continuation of Ser. No. 555,387, Aug. 3, 1990, abandoned, which is a continuation of PCT/AU89/00045 filed Feb. 6, 1989. This application Oct. 5, 1991, Ser. No. 641,875

Claims priority, application Australia, Feb. 5, 1988, PI6643

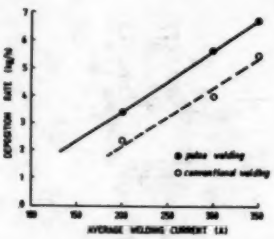
Int. Cl.[5] B23K *9/09, 35/362*

U.S. Cl. 219—130.51 **15 Claims**

6. A pulsed electric arc welding apparatus operating with the following welding pulse parameters:

Pulse Energy	8 to 250 J
Pulse Frequency	10 to 500 Hz
Background Current	8 to 250 A
Wire Feed Speed	1 to 20 m/min

and including a cored electrode wire wherein the core constitutes 15–28% of the weight of the wire and contains slag-forming components which include from 2.5–12% calcium fluoride,



2–8% calcium carbonate, 0.2–2% silicon dioxide, 0.5–1.5% fused mixed-oxide and no intentional aluminum, and said core excludes silicate components.

5,192,852

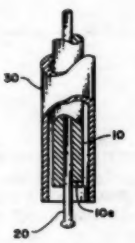
SUBSTANTIALLY OXYGEN-FREE CONTACT TUBE

James F. Pike, Newport News, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 14, 1991, Ser. No. 791,728

Int. Cl.[5] B23K *9/24*

U.S. Cl. 219—137.61 **18 Claims**



1. A device for arc welding, comprising:

(a) a continuously-fed consumable electrode wire; and

(b) a contact tube which is in electrical contact with said electrode wire, wherein said tube is comprised of a substantially oxygen-free conductive alloy for reducing electrical erosion of said contact tube.

5,192,853

HEATING SET HAVING POSITIVE TEMPERATUE COEFFICIENT THERMISTOR ELEMENTS ADHESIVELY CONNECTED TO HEAT RADIATOR DEVICES

Yuan-Chang Yeh, No. 101, 223 Alley, Sec. 1, Tay Pyng Rd., Tsao Twen, Nan Tour, Taiwan

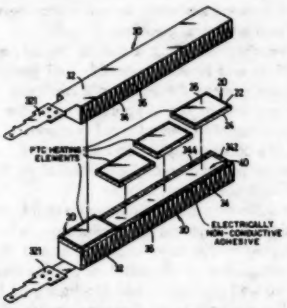
Filed Oct. 22, 1991, Ser. No. 780,504

Int. Cl.[5] H05B *3/14;* **H01C** *7/02;* **F24H** *3/04*

U.S. Cl. 219—540 **3 Claims**

1. A heating set having a positive temperature coefficient thermistor heating element (PTCR) comprising a positive temperature coefficient resistor member having opposite substantially horizontal surfaces along with the electrodes adhered correspondingly to said surfaces, a metal heat radiating device having a flat metal surface adjacent to an exposed surface of at least one of said electrodes, and an electrically nonconducting adhesive on a portion of said flat metal surface of said metal heat radiating device bonding the exposed surface of said electrode to the adjacent flat surface of said heat radiat-

ing device, said heating set further characterized in that it is provided with an electrically conductive thin piece having a surface area which is disposed in such a manner that it makes



direct surface to surface contact with both the flat surface of said heat radiating device other than on said portion provided with said adhesive and the exposed surface of said electrode.

5,192,854

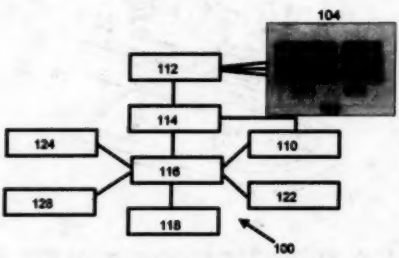
SYSTEM FOR ELECTRONICALLY RECORDING AND REDEEMING COUPONS

Reginald D. Counts, 1714 Legend La., St. Louis, Mo. 63146

Continuation of Ser. No. 558,775, Jul. 26, 1990, abandoned. This application Feb. 5, 1992, Ser. No. 829,561

Int. Cl.[5] G06F *7/20, 15/74*

U.S. Cl. 235—375 **3 Claims**



1. A coupon redemption system for redeeming product coupons having a first set of data thereon, said first set of data being in a machine readable format and comprising coupon value, expiration date, and product identification, said system comprising:

personal coupon scanner means for use by a purchaser of products for scanning, decoding, and storing said first set of data, and also having a display means associated therewith for displaying scanned and stored information contained in said coupon scanner, said personal coupon scanner means being a self contained remote handheld device adapted to be carried by said purchaser of product and used to record coupon information obtained from advertising media at locations remote from a purchasing location;

register means located at a product purchase location for scanning and tallying a second set of data, said second set of data comprising product identification data corresponding to product selected for purchase by said purchaser of product;

recorder means for connecting to said coupon scanner and said register means for comparing said first set of data to said second set of data and accumulating a tallied value of correspondence between said sets of data for redemption of said tallied value against said product selected for purchase; and

kiosk means providing a central in-store database for accumulating from all the recorder means connected in the system the tally of correspondence of said first and second sets of data.

5,192,855

IMPROVEMENTS IN CASH PAYMENT MACHINES ENABLING ACCEPTANCE OF CREDIT CARD PAYMENT

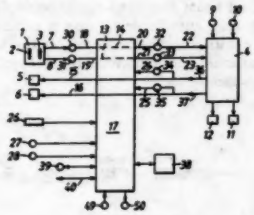
Björn Insulander, and Torbernt Hjelmvik, both of Järfälla, Sweden, assignors to Modul-Elektronik AB, Järfälla, Sweden

Filed Dec. 5, 1990, Ser. No. 622,520

Claims priority, application Sweden, Dec. 6, 1989, 8904126

Int. Cl.[5] G06F *7/08;* G06K *5/00*

U.S. Cl. 235—381 **8 Claims**



1. An arrangement in pay machines of the kind which include a received money verifier, a first computer unit which functions to activate an intermediate cash till which receives money from said received money verifier, said intermediate cash till being adapted to guide received money to a final cash storage means, and which said first computer unit also functions, subsequent to received money payment having been verified and accepted, to activate devices for delivering that for which payment has been made, said arrangement further comprising a supplemental second computer unit (17) which is connected between the money verifier (1) and the first computer unit (4); said second computer unit being adapted to simulate payment as being effected by money when payment, in fact, has been effected by a credit card; and wherein said second supplemental computer unit (17) is adapted to detect a control signal delivered by said first computer unit (4) to a device (5, 6) which is adapted to function to control said intermediate cash till and said final cash storage means; a credit card reader and input button means connected to said supplemental second computer unit (17) and said input button means being adapted, when activated, to deliver to the supplemental second computer unit (17) a signal which corresponds to a given sum of money; and, when payment is made by credit card and said input button means (27, 28) are activated and payment of a given sum has been accepted, said supplemental second computer unit (17) simulates and will deliver to the first computer unit (4) a signal which corresponds to receipt by the money verifier (1) of one or more accepted pieces of money constituting said given sum.

5,192,856

AUTO FOCUSING BAR CODE READER

Moshe Schaham, West Hartford, Conn., assignor to An Con Genetics, Inc., Melville, N.Y.

Filed Nov. 19, 1990, Ser. No. 615,367

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—462 **19 Claims**

1. An apparatus for use in reading a bar code having a spaced alternating sequence of electromagnetically absorptive and reflective regions along a scan axis at a distance from a target, said apparatus comprising:

a housing adapted to be manually placed in communication

with said bar code having a port for sending and receiving electromagnetic beams;

an electromagnetic signal source located within said housing for providing an electromagnetic illumination beam at a selected frequency and intensity;

an optical train positioned within said housing including

fixed beam shaping optics for receiving and spreading said illumination beam to exit said housing port and irradiating said bar code completely along said scan axis with said housing at a single position relative to said target, and

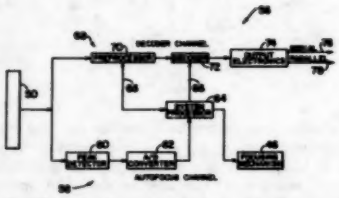
auto-focusing optics for receiving a reflected beam from said bar code and adjusting the focal point of said reflected beam exiting therefrom;

a motor means for adjusting the position of said auto-focusing optics in dependence on received control signals;

a sensor means for receiving said focused reflected beam from said auto-focusing optics and for providing electrical signal equivalents thereof;

a processor means mounted within said housing, receiving said reflected beam electrical signal equivalents, for first generating said auto-focusing optics control signals in accordance with a method comprising the steps of:

detecting maximum and minimum signal magnitudes in said signal equivalents;



digitizing said maximum and minimum signal magnitudes in said signal equivalents;

computing a contrast value for said maximum and minimum signal magnitudes in said signal equivalents;

generating said control signals to move said auto-focusing optics by an amount inversely proportional to the magnitude of said contrast value;

said processor means repeating said method until said control signals have a minimum value wherein the difference between said contrast value and a previously computed contrast value is less than a preselected value and wherein said contrast value is greater than a threshold value;

said processor means, after generating said control signal minimum value, further for subsequently decoding said reflected beam signal equivalents with a method comprising the steps of:

digitizing said signal equivalents;

measuring the width of portions of said digitized signal equivalents along said scan axis corresponding to said electromagnetically absorptive and reflective regions to generate bar code width sequence signals; and

generating an output signal corresponding to an equivalent bar code digit sequence from said bar code width sequence signals.

5,192,857

COMPACT OPTICAL SCANNER ROTATABLE BETWEEN HORIZONTAL AND VERTICAL POSITIONS

Paul O. Detwiler, New Concord, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Sep. 28, 1990, Ser. No. 590,202

Int. Cl.[5] G06K 7/10

U.S. Cl. 235—467 **15 Claims**

1. A compact optical scanning apparatus adapted for movement between a horizontal and a vertical position for reading bar code symbols on objects passing adjacent the scanning apparatus comprising:

a housing assembly including a surface having an aperture therein, a floor portion and oppositely located first and second wall portions located adjacent said aperture and a third wall portion extending between said first and second wall portions;

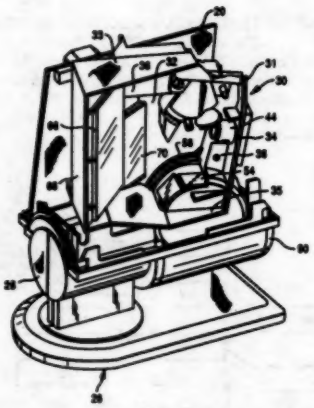
a support member having a socket portion rotatably supporting said housing assembly for movement between a horizontal and a vertical position;

a pivot member including a pair of flexible arm portions secured to said housing assembly and positioned within the socket portion for exerting a frictional force on the socket portion of the support member for holding the housing assembly in an adjusted position;

a source of a coherent light beam mounted in said third wall portion for projecting the light beam along the floor portion of said housing assembly;

first light deflecting means mounted on said floor portion for reflecting the projected light beam along a first light path;

a multifaceted mirror member having an axis of rotation and being mounted adjacent said floor portion and said second and third wall portions in said first light path for cyclically sweeping the light beam along a plurality of second light paths, said mirror member including a plurality of mirror facets in which a first mirror facet slopes downwardly in and towards the axis of rotation at a first predetermined



angle from the axis and an adjacent second mirror facet slopes downwardly out and away from the axis of rotation at a second predetermined angle from the axis;

drive means mounted adjacent said floor member and rotatably supporting said multifaceted mirror member for rotating said multifaceted mirror member;

second light deflecting means mounted adjacent the floor member in a stationary position with respect to the multifaceted mirror member and in said second light paths for establishing a range of path lengths for said second light paths, which includes a minimum path length and a maximum path length, and for deflecting the light beams in said second light path along a plurality of third light paths through said aperture in the form of a scanning pattern for scanning a bar code label positioned adjacent the aperture;

a lens member positioned adjacent said first light deflecting means and said first wall portion for collecting the light beams reflected from the scanned bar code label and directing the collected light beams along a fourth light path; and

detecting means mounted in said first wall portion and in said fourth light path for generating electrical signals in response to receiving the collected light beams form said lens member.

5,192,858

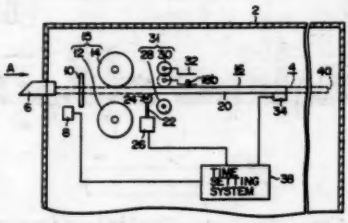
OPTICAL CARD SCANNING APPARATUS

Takefumi Sakurada, Akishima, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 18, 1991, Ser. No. 687,445

Int. Cl.[5] G06K *13/00*

U.S. Cl. 235—475 8 Claims



1. An optical card scanning apparatus comprising:

a housing having an insertion port;

a card convey path provided within the housing and having a first-end side defined by the insertion port and a second-end side, and wherein an optical card loading/unloading position is set in the vicinity of said first-end side, and an optical card is conveyed along the card convey path from said first-end side toward said second-end side;

support means having a first end on the first-end side of the card convey path, a second end on the second-end side of the convey path, and a support member for supporting the optical card between the first and second ends of the support means, said support means being movable while supporting the optical card between the loading/unloading position of the card convey path and the second-end side of the convey path;

convey means for conveying the optical card, selectively in a forward direction from the insertion port towards the support member of the support means and in a reverse direction from the support member of the support means towards the insertion port;

a detection system having a plurality of detection means arranged along the card convey path, each of said detection means detecting the presence of the optical card along the convey path at the respective position of the detection means, and generating an output signal while the presence of the card is being detected;

a time setting system having time setting means for comparing time differences between the output signals from two detection means with a standard time, and, when the compared values are different, outputting operation abnormality detection signals; and

control means for controlling the convey means, on the basis of the operation abnormality detection signal, so as to convey the optical card in the reverse direction and eject the card from the insertion port.

5,192,859

CARD CARRIER IN CARD READER

Susumu Kojima, and Masanori Tanaka, both of Sakado, Japan, assignors to Kabushiki Kaisha Nippon Conlux, Tokyo, Japan

Continuation of Ser. No. 382,950, Jul. 21, 1989, abandoned. This application Nov. 26, 1991, Ser. No. 797,152

Claims priority, application Japan, Jul. 26, 1988, 63-98695; Jul. 26, 1988, 63-98696; Jul. 26, 1988, 63-98697; Jul. 26, 1988, 63-98698; May 22, 1989, 1-58825; May 22, 1989, 1-58826

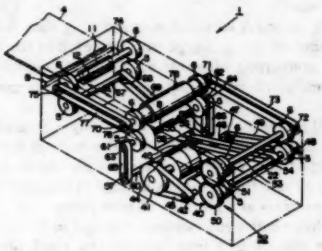
Int. Cl.[5] G06K *13/077, 13/30*

U.S. Cl. 235—481 19 Claims

1. A card carrier in a card reader in which a magnetic card having a magnetic recording surface on and around a center portion thereof is moved in a card conveyor passageway provided with a magnetic sensor for reading and writing data from and into the magnetic card, and the magnetic card is temporarily stopped in the card conveyor passageway to make a punch hole in the card, comprising:

card conveyor means including a plurality of driving roller units, each unit comprising an upper driving roller (6) and a lower driving roller (5) for holding therebetween only both sides of the magnetic card in the card conveyor passageway and for forcibly conveying the magnetic card along a longitudinal direction of the card conveyor passageway without contacting the magnetic recording surface, said roller units being disposed at a predetermined spacing along a longitudinal direction of the card conveyor passageway;

drive means including a single motor;



power transmission means including a plurality of timing pulleys and a plurality of timing belts for simultaneously transmitting a driving force of the motor to all of the driving rollers;

a clutch mechanism disposed between the power transmission means and the motor for transmitting the drive force of the motor to the power transmission means when the motor arrives at a predetermined rated rotational speed; and

power interrupting means including a brake mechanism for stopping the operation of the power transmission means instaneously.

5,192,860

FOCUS STATE DETECTION DEVICE

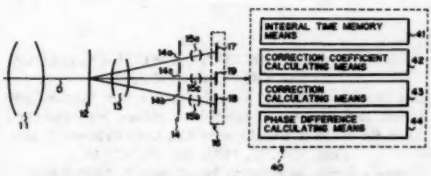
Junichi Shinohara, Yokohama, and Yoshimi Ohno, Kawasaki, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 12, 1991, Ser. No. 758,694

Claims priority, application Japan, Sep. 18, 1990, 2-246211; Nov. 13, 1990, 2-304011; Nov. 15, 1990, 2-307242; Jun. 30, 1991, 3-185341

Int. Cl.[5] G01J *1/20*

U.S. Cl. 250—201.8 8 Claims



1. A focus state detection device comprising:

a first optical conversional system for introducing an optical flux of a region in a view field frame to be photographed to one of two symmetric positions with respect to an optical axis of said optical flux;

a second optical conversional system for introducing an optical flux of said region to the other of said two symmetric positions;

a third optical conversional system for introducing an optical flux of said region to a position including said optical axis;

first and second photoelectric converting portions for respectively receiving two light beams formed by said first and second optical conversional systems in a region in which a plurality of photoelectric converting elements of a charge storing type are arranged in line;

a third photoelectric converting portion for receiving a light beam formed by said third optical conversional system in a region in which a plurality of photoelectric converting elements of a charge storing type are arranged in line;

a charge clearing section for clearing a charge stored to each of said first, second and third photoelectric converting portions;

a charge transfer section for transferring data indicative of an amount of the charge stored to each of the photoelectric converting elements in said first, second and third photoelectric converting portions to a data memory section;

control means for selectively generating a clearing signal in said charge clearing section and a transfer signal in said charge transfer section to respectively obtain three image data by said first, second and third photoelectric converting portions at a plurality of time points;

a monitor photometric section arranged in the vicinity of at least one of said first, second and third photoelectric converting portions;

monitor control means for making an average of the stored charge amount in said photoelectric converting portions constant on the basis of an output of the monitor photometric section;

integral time memory means for providing data of an integral time at a plurality of time points from the generation of the clearing signal in said charge clearing section to the generation of the transfer signal in said charge transfer section, and for storing the integral time data thereto;

correction coefficient calculating means for calculating a correction coefficient corresponding to a ratio of integral times at preceding and present times with respect to the data of integral times obtained by the integral time memory means at the plural time points;

correction calculating means for correcting image data at the present or preceding time with respect to the image data obtained by said first, second and third photoelectric converting portions at the plural time points, on the basis of data of the correction coefficient obtained by said correction coefficient calculation means; and

phase difference calculating means for providing phase difference data based on the image data at preceding or present time and phase difference data based on the image data corrected by said correction calculating means at the present or preceding time.

5,192,861

X-RAY IMAGING DETECTOR WITH A GASEOUS ELECTRON MULTIPLIER

Amox Breskin, Rehovot; Rachel Chechik, Bet Hanan, both of Israel, and Stanislaw Majewski, Grafton, Va., assignors to Yeda Research & Development Co. Ltd., Rehovot, Israel

Filed Mar. 27, 1991, Ser. No. 675,652

Claims priority, application Israel, Apr. 1, 1990, 93969

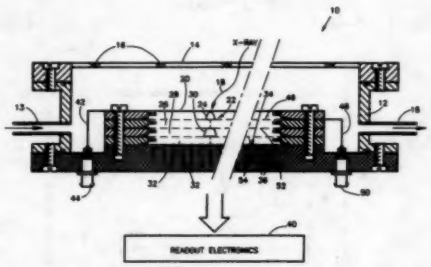
Int. Cl.[5] H01J *31/50, 40/14, 43/20*

U.S. Cl. 250—214 VT **21 Claims**

1. An X-ray detector comprising:

a photocathode for receiving X-ray radiation and being operative to provide in response thereto an output of electrons; and integrally formed therewith

at least one gaseous electron multiplier having a gas and operative in response to the output of electrons from the photocathode to provide an avalanche comprising an increased number of electrons, and wherein



said at least one electron multiplier includes a pre-amplification stage and said photocathode constitutes a cathode of said preamplification stage.

5,192,862

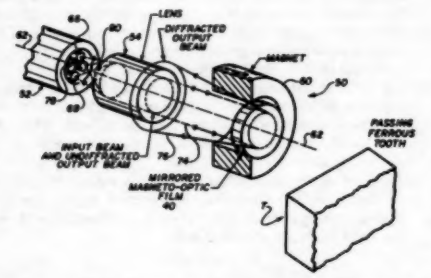
POLARIZERLESS MAGNETO-OPTIC SPEED AND TORQUE SENSOR

Robert E. Rudd, III, Middlebury, Vt., assignor to Simmonds Precision Products, Inc., Akron, Ohio

Filed Dec. 19, 1991, Ser. No. 810,290

Int. Cl.[5] H01J *5/16*

U.S. Cl. 250—227.21 **34 Claims**



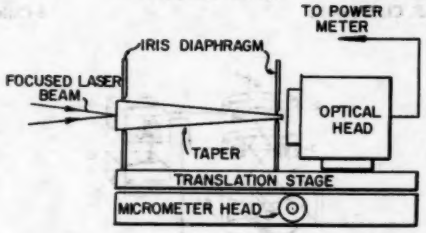
1. A polarizerless sensor for determining speed/torque of a rotatable member comprising a magneto-optic material, a magnetic field source and optic fiber means connectable to a s source of light for providing an optical path for input light between said light source and said magneto-optic material and for output light exiting said magneto-optic material, said material being positionable within said magnetic field with said magnetic field being modulated by rotation of the member so that said magnetic field modulation corresponds to speed/-torque of the rotatable member, said magneto-optic material having domains responsive to said modulated magnetic field and diffracting said light, said output light having a diffraction pattern with an energy distribution that changes in response to said modulated magnetic field-, said fiber optic means receiving a predetermined portion of said output light.

5,192,863

OPTICAL TAPER FOR INCREASING THE EFFECTIVE AREA OF A PHOTODIODE IN ATMOSPHERIC FREE SPACE COMMUNICATIONS APPLICATIONS

Mohsen Kavehrad, Cumberland, and Gang Yun, Vanier, both of Canada, assignors to The University of Ottawa, Ottawa, Canada

Filed Jan. 23, 1991, Ser. No. 644,571
Claims priority, application Canada, Jan. 24, 1990, 2008515
Int. Cl.[5] H01J 40/14
U.S. Cl. 250—227.24 8 Claims



1. For use as an optical receiver in a free space, an atmospheric link, or a free space and an atmospheric link, the combination of:

i) a photodiode having a surface area of a size selected to permit reception of a signal at a high bit rate;

ii) an optical taper having a head with a flat face and a tail, said head being of greater diameter than said tail, and axially aligned with said tail, said tail being axially aligned with said photodiode; and

wherein the magnification M of the taper, being the ratio between the diameter of the head to the diameter of the tail, satisfies:

$$M \leq \frac{D_1}{D_{N+1}} \leq \frac{\sin(\Phi_T + 2\alpha)}{\sin(\theta_o + \alpha)}$$

where θ is the angle between a given ray of light at the head of the taper and linear axis of the taper, α is the angle between the side surface of the taper and the linear axis thereof, $\Phi_T = \pi/2 - \theta_T$ where θ_T is the critical angle of the total internal reflection from the internal material of the taper relative to the surrounding atmosphere, D_1 is the diameter of the taper at its head and D_{N+1} is the diameter of the taper near its tail.

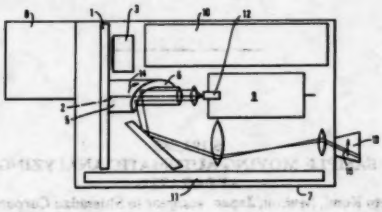
5,192,864

TWO DIMENSIONAL DISPLAY PRODUCED BY ONE DIMENSIONAL SCANNED EMITTERS

Robert K. McEwen, and Alan D. MacLeod, both of Essex, United Kingdom, assignors to GEC-Marconi Limited, Stanmore, United Kingdom

Filed Aug. 21, 1991, Ser. No. 748,212
Claims priority, application United Kingdom, Sep. 5, 1990, 9019335
Int. Cl.[5] H01J 3/14
U.S. Cl. 250—234 7 Claims

1. An imager comprising: a sensor array consisting of a two dimensional array of sensing elements positioned relative to the lens such that the lens focuses on image on the sensor array; a rotatable chopper providing a shuttering function for the array; readout means for the sensor array; mechanical drive means for the chopper synchronized to the readout means; a linear array of optical elements, arranged to sequentially receive signals representative of the intensity of a sub-region of the image and to produce a sub-image in dependence thereon; and a reflective surface mechanically coupled to said chopper and arranged to scan the sub-images sequentially formed by the optical elements to produce, to an observer due to the persistence of vision, a two dimensional image which is representative of the received image.

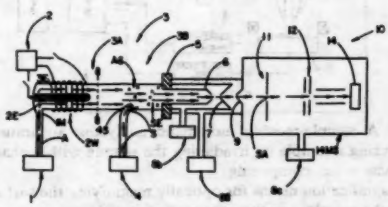


5,192,865

ATMOSPHERIC PRESSURE AFTERGLOW IONIZATION SYSTEM AND METHOD OF USE, FOR MASS SPECTROMETER SAMPLE ANALYSIS SYSTEMS

Jianzhong Zhu, Omaha, Nebr., assignor to Cetac Technologies Inc., Omaha, Nebr.

Filed Jan. 14, 1992, Ser. No. 821,770
Int. Cl.[5] H01J 49/04
U.S. Cl. 250—288 26 Claims



1. An electric discharge chamber system for use in mass spectrometer sample analysis systems using metastable species at atmospheric pressure to controllably fragment and ionize sample comprising:

an electric discharge chamber, which electric discharge chamber is elongated and essentially tubular in shape, and which electric discharge chamber is encompassed by an outer electric coil at an extent thereof at which means for accessing a source of matrix carrier gas is present; which electric discharge chamber, at an extent thereof distal to that at which the outer electric coil and means for accessing the source of matrix carrier gas are present, termed the "afterflow" portion of the electric discharge chamber, provides means for accepting sample and means for connecting to a mass spectrometer; such that during use electrical energy is provided to the outer electric coil and matrix carrier gas is entered into the electric discharge chamber through the means for accessing a source of matrix carrier gas, such that interaction between electric energy and matrix carrier gas during electric discharge causes formation of metastable species, which metastable species are caused to be transported to the afterglow portion of the electric discharge chamber whereat the energy therein interacts with sample introduced thereto at the means for accepting sample, which introduced sample does not pass through the extent of the electric discharge chamber in which electric discharge occurs and, hence, is not directly affected by energy other than that released from said metastable species, to produce ionized sample molecules and/or ionized sample fragments; which ionized sample molecules and/or ionized sample fragments are, during use, transported into a mass spectrometer which is connected to the means for connection thereto

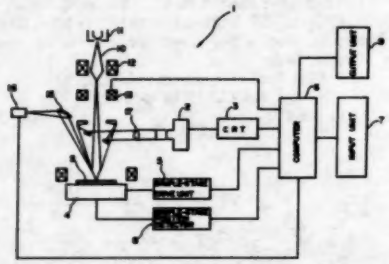
present on the electric discharge chamber, for detection by an ion detector element therein.

5,192,866

SAMPLE-MOVING AUTOMATIC ANALYZING APPARATUS

Hideto Komi, Mukou, Japan, assignor to Shimadzu Corporation, Kyoto, Japan

Filed Jul. 16, 1991, Ser. No. 730,422
Claims priority, application Japan, Jul. 26, 1990, 2-200278
Int. Cl.[5] H01J 37/26
U.S. Cl. 250—310 5 Claims



1. A sample-moving auitomatic analyzing apparatus for analyzing a sample by irradiating the sample with a charged-particle beam, comprising:

magnification means for optically magnifying the surface of the sample, creating a magnified image;

display means coupled to said magnification means for displaying the magnified image of the surface of the sample on a CRT at a fixed magnification;

setting means for setting analytical areas or analytical positions on the image of the sample displayed on said CRT;

designating means for designating a travel path of the charged-particle beam between said analytical areas or said analytical positions, said designating means including an input unit for inputing said analytical areas or analytical positions, as well as non-irradiated areas, a travel path computing unit for computing the travel path based upon input data from said input unit, said travel path computing unit having means for computing a straight line connecting an end point and a starting point of analytical areas or analytical positions which are mutually adjacent to each other in an order of analysis, and means for obtaining points of intersection at which the straight line intersects the non-irradiated area, said travel path computing unit also having a travel path memory for storing data indicative of the travel path inputed from said input unit, wherein said travel path computing unit computes a plurality of diverse, specialized travel paths based on said input data, to prevent irradiation of the non-irradiated areas; and

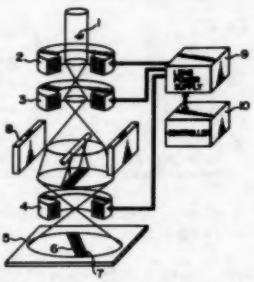
moving means for moving a sample stage said moving means including means for computing an amount of drive of the sample stage based upon data indicative of a designated position or travel path on said CRT, and a sample stage drive in such a manner that a point on the sample corresponding to the travel path designated by said designating means will be brought to an optic axis of the charged-particle beam.

5,192,867

ELECTRON OPTICAL MEASUREMENT APPARATUS

Nobuyuki Osakabe, Kawagoe; Junji Endo, Sakado; Akira Tonomura, Saitama; Masahiro Tomita, Katsuta, and Tadao Furutsu, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 663,472, Mar. 4, 1991, abandoned, which is a continuation of Ser. No. 462,769, Nov. 10, 1990, Pat. No. 4,998,788. This application May 9, 1991, Ser. No. 697,576
Claims priority, application Japan, Jan. 13, 1989, 1-004999; May 9, 1990, 2-117544
Int. Cl.[5] G03H 1/00
U.S. Cl. 250—311 5 Claims



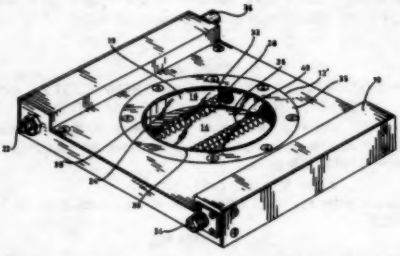
1. An electron holography apparatus having an electron source, a specimen holder, an electron lens system and electron biprism means, said apparatus comprising means for rotating at least one of a specimen and said electron biprism means about the electron optics axis so as to adjust and maintain a determined directional relationship between a specimen image and said electron biprism means independent of changes of a magnification of the electron lens system.

5,192,868

IMPROVED PROPORTIONAL COUNTER DETECTOR

John M. Dudley, Knoxville, Tenn., assignor to Tennelic/Nucleus Inc., Oak Ridge, Tenn.

Filed Aug. 7, 1991, Ser. No. 741,543
Int. Cl.[5] G01T 1/185
U.S. Cl. 250—374 19 Claims



1. An improved proportional detector for determining low concentrations of radioactivity, said detector comprising:

a detector body member defining a cavity having an open face;

a proportional detector gas composition contained within said cavity;

at least one anode member traversing said cavity for multiplying and collecting electrons resulting from interaction of said radioactivity with said gas, said at least one anode member being electrically insulated from said body member;

a conductive perforated grid member substantially concentric with said at least one anode member, said perforated grid member having openings for the passage of said electrons and being electrically insulated from said body member and from said at least one anode member for isolating said at least one anode member from said body;

a source for applying a selected voltage to said at least one anode member; and

a further source for applying a selected voltage to said grid member of a value less than said selected voltage on said at least one anode member.

5,192,869

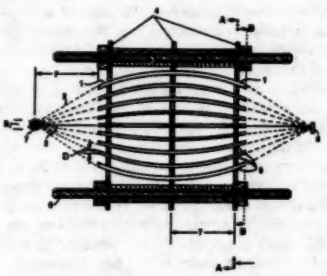
DEVICE FOR CONTROLLING BEAMS OF PARTICLES, X-RAY AND GAMMA QUANTA

Muradin A. Kumakhov, Moscow, U.S.S.R., assignor to X-Ray Optical Systems, Inc., Voorheesville, N.Y.

Continuation-in-part of Ser. No. 607,456, Oct. 31, 1990, abandoned. This application Apr. 1, 1991, Ser. No. 678,208

Int. Cl.[5] G02B *5/124*

U.S. Cl. 250—505.1 **69 Claims**



1. A device for controlling beams of particles, X-ray and gamma quanta, comprising a plurality of channels having inner surfaces exhibiting multiple total external reflections, input butt-ends facing a radiation source, and output butt-ends aimed at a radiation receiver, said channels being formed by channel-forming elements located along generatrices of imaginary controlled surfaces, said channel-forming elements are rigidly located relative to one another at multiple locations by means of a rigid support structure, said plurality of channel supporting means being mounted along said channels with a spacing of supports less than, or equal to, the spacing at which sagging of the channel-forming elements begins to interfere with beam propagation for the radiation spectrum for which high transmission efficiency is desired.

5,192,870

OPTICAL SUBMICRON AEROSOL PARTICLE DETECTOR

John S. Batchelder, Somers; Donald M. DeCain, New York, and Philip C. D. Hobbs, Briarcliff Manor, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 14, 1992, Ser. No. 820,709

Int. Cl.[5] G01N *15/06*

U.S. Cl. 250—574 **16 Claims**

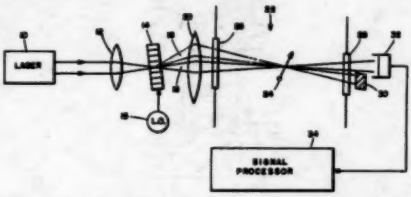
1. A particle detector for detecting particles within an enclosed volume, the detector comprising:

beam splitter means;

laser means for directing a coherent optical beam along a path to said beam splitter means, said beam splitter means splitting said coherent optical beam into at least first and second beams, the first beam deflected from the path of said second beam, both said first and second beams having a point of origin in the vicinity of said beam splitter means;

optical means for imaging said point of origin into said enclosed volume, whereby said first and second beams are caused to cross and interfere at an interaction region within said enclosed volume;

detector means responsive to at least one said beam for sensing optical energy scattered by a particle's passage through said interaction region, said particle creating a



Doppler shifted burst in said optical energy, said detector means producing an electrical signal including a Doppler tone burst analogue of said Doppler shifted burst; and means for processing said electrical signal to determine the presence of said particle in said interaction region.

5,192,871

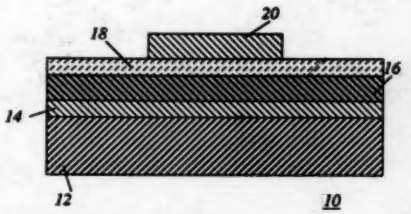
VOLTAGE VARIABLE CAPACITOR HAVING AMORPHOUS DIELECTRIC FILM

E. S. Ramakrishnan; Kenneth D. Cornett, and Wei-Yean Howng, all of Albuquerque, N. Mex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 15, 1991, Ser. No. 776,034

Int. Cl.[5] H01L *29/92*

U.S. Cl. 257—595 **25 Claims**



1. A semiconductor device, comprising:

a semiconductor substrate having a layer of semiconductor material deposited thereon, said material having higher resistivity than the substrate;

a dielectric layer deposited on the higher resistivity layer;

an amorphous layer of dielectric material deposited on the dielectric layer; and

a top electrode formed on the amorphous layer.

5,192,872

CELL STRUCTURE FOR ERASABLE PROGRAMMABLE READ-ONLY MEMORIES

Ruojia Lee, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Sep. 13, 1991, Ser. No. 759,273

Int. Cl.[5] H01L *29/68*

U.S. Cl. 257—315 **22 Claims**

1. A semiconductor device having a transistor comprising:

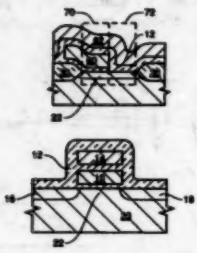
a) a transistor source;

b) a transistor drain;

c) a transistor channel interposed between said source and said drain;

d) a gate having first and second segments, said first segment being substantially centered between and in a superior plane to said source and said drain and over a portion of

said channel, and said second segment extends beyond said channel, said source, and said drain,



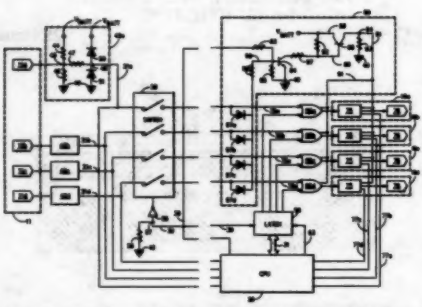
whereby said second segment extension results in an improved coupling coefficient of the transistor.

5,192,873

FAIL-OPERATIONAL CONTROL SYSTEM FOR VEHICLE LOADS

Bruce R. Wrenbeck, Dearborn, and David A. Parker, Westland, both of Mich., assignors to United Technologies Automotive, Inc., Dearborn, Mich.

Filed Feb. 26, 1991, Ser. No. 660,383
Int. Cl.[5] H02D *9/26*
U.S. Cl. 307—38 **16 Claims**



1. A fail-operational control system having a normal operating mode and a fail-operational mode, comprising:

a plurality of low current switches for providing input signals in response to the selective activation of said switches;

a plurality of high current loads;

means for providing control signals for selectively controlling said loads in response to said input signals and for providing a valid signal in response to the operation of said control system in a normal operating mode; and

switching means responsive to the absence of said valid signal for selectively connecting certain ones of said switches directly to a corresponding one or combination of said loads, thereby providing said input signals directly to said corresponding one or combination of said loads.

5,192,874

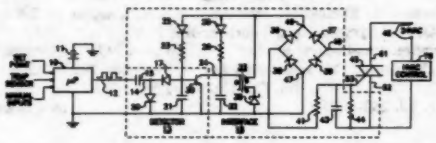
INTERFACE CIRCUIT FOR LOW POWER DRAIN MICROPROCESSOR-BASED THERMOSTAT

John T. Adams, Minneapolis, Minn., assignor to Honeywell, Inc.

Filed Sep. 26, 1991, Ser. No. 765,855
Int. Cl.[5] H01H *47/00*
U.S. Cl. 307—125 **7 Claims**

1. A microprocessor-controlled power switching circuit for controlling flow of electrical power to a system including a thyristor having a control terminal and conducting between power terminals responsive to a first state of a first control signal and not conducting responsive to a second state of the first control signal, a microprocessor having an output port providing a power-on signal having an alternating voltage pattern in response to an external condition signal and a power-off signal comprising a steady state voltage otherwise, said switching circuit including

a) a detector circuit receiving the power-on and power-off signals and comprising converter means for converting the power-on and power-off signals to a second control signal having respectively a constant first voltage near ground and a constant second voltage displaced from ground, and a first transistor having a base terminal and



power terminals and receiving the second control signal at its base terminal and entering first and second conduction states responsive respectively to the first and second voltages of the second control signal; and

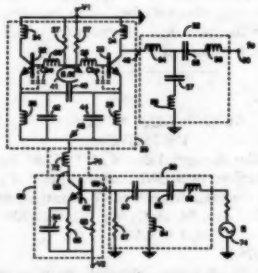
b) an interface circuit including a rectifier circuit having input terminals connected across the thyristor power terminals and an output terminal providing DC power when the thyristor is nonconductive, and a second transistor having a control terminal connected to the first transistor, said second transistor allowing current flow comprising the first and second states of the first control signal from the rectifier circuit output terminal to the thyristor control terminal responsive respectively to the first and second conduction states of the first transistor.

5,192,875

ANALOG FREQUENCY DIVIDER UTILIZING TWO AMPLIFIERS AND A LC RESONANT CIRCUIT

Ronald F. Kielmeyer, Jr., Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 4, 1991, Ser. No. 787,474
Int. Cl.[5] H03B *19/00*
U.S. Cl. 307—219.1 **20 Claims**



12. A frequency divider for receiving an input frequency f_I and providing an output frequency $f_o=f_I/N$ where N is an even number, comprising:

first and second amplifying devices, each having control, reference and output terminals;

first and second tuned circuits having high resonant impedance at f_o, wherein a first port of the first tuned circuit is couple to the reference terminal of the first amplifying device and a first port of the second tuned circuit is coupled to the reference terminal of the second amplifying

device and second ports of the tuned circuits are coupled to a port for receiving input frequency f_c and

a closed loop circuit comprising the control and reference terminals of the first amplifying device and the reference and control terminals of the second amplifying device and an inductance and a capacitance, wherein the inductance and capacitance are chosen to provide a low impedance in the closed loop circuit at f_o, wherein the output frequency f_o is at the output terminal of one of the amplifying devices;

5,192,876

FLAT PULSE GENERATOR

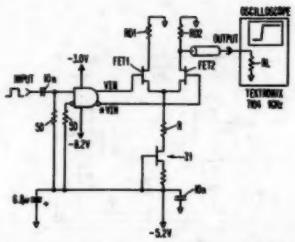
Koji Karube, Hinoshi, Japan, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 425,755, Oct. 23, 1989, abandoned. This application Aug. 16, 1991, Ser. No. 749,507

Claims priority, application Japan, Dec. 18, 1987, 62-320846

Int. Cl.[5] H03K *4/00, 5/01, 6/00*

U.S. Cl. 307—260 **14 Claims**



1. A flat pulse generator for providing a flat pulse signal, comprising:

a pair of first and second FETs, said first and second FETs having commonly connected sources which are further connected to a current source;

a first input terminal for applying a first input signal to agate of said first FET;

a second input terminal for applying a second input signal which is in inverse-phase to said first input signal to a gate of said second FET;

a terminal for connecting a load directly to a drain of said second FET; and

a first resistance connected between a drain of said first FET and ground and a second resistance connected between a drain of said second FET and ground, said first and second resistances having values whereby a composite resistance value between the drain of said second FET and ground when said load is connected thereto is the same as a composite resistance value between the drain of said first FET and ground such that a loading condition of said current source by said load is maintained at the same constant level before and after said first and second input signals change logic levels.

5,192,877

HALL EFFECT SENSOR AND COMPONENT PROVIDING DIFFERENTIAL DETECTION

Jean Bittebierre, Campagne des Granges, and Philippe Biton, Caluire, both of France, assignors to l'Electricfil Industrie, France

Filed May 29, 1991, Ser. No. 707,059

Claims priority, application France, May 30, 1990, 90 06966

Int. Cl.[5] H03K *17/90, 5/22*

U.S. Cl. 307—309 **18 Claims**

1. A differential detection Hall effect component, comprising:

first and second groups of Hall effect probes;

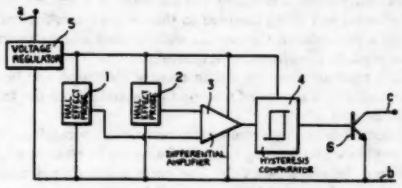
positioning means for positioning the two groups at locations spaced apart from each other;

pole means for subjecting the probes to induction fields which vary in response to movement of a field-disturbing member relative to the probes and which are created by at least one permanent magnet;

differential amplifier means for generating an induction difference signal representative of a detected induction difference between the two groups of probes;

a hysteresis level comparator;

means for applying the induction difference signal to the hysteresis level comparator to cause the comparator to generate a first logic signal in a first logic state when the detected induction difference is greater than a high switchover threshold and to generate a complementary



logic signal in a second logic state when the detected induction difference is less than a low switchover threshold,

wherein said pole means is arranged to subject the groups of probes, in the absence of field-disturbing members detectable by the probes to different respective ones of said induction fields so that a bias induction difference is present between the two groups in said absence of field-disturbing members,

thereby obtaining logic signals in predetermined logic states at an output of the hysteresis level comparator in spite of induction difference dispersions in the component which lie between a minimum value of the low switchover threshold and a maximum value of the high switchover threshold.

5,192,878

HIGH-SPEED DIFFERENTIAL AMPLIFIER

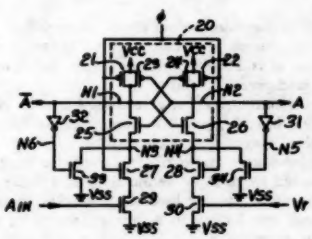
Sanpei Miyamoto, and Hidetoshi Uehara, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 476,494, Jun. 7, 1990, which is a continuation of PCT/JP89/01029 filed Oct. 6, 1989, abandoned. This application Nov. 27, 1991, Ser. No. 799,866

Claims priority, application Japan, Oct. 11, 1988, 63-255542

Int. Cl.[5] H03K *5/24, 3/356*

U.S. Cl. 307—362 **23 Claims**



1. A differential amplifier comprising:

first, second, third and fourth nodes;

a first transistor of a first conductivity type having a first control electrode coupled to the first node, said first transistor being coupled between the second node and a source of a first potential;

a second transistor of the first conductivity type having a

second control electrode coupled to the second node, the second transistor being coupled between the first potential source and the first node;

a third transistor of a second conductivity type having a third control electrode coupled to the second node, the third transistor being coupled between the first node and the third node;

a fourth transistor of the second conductivity type having a fourth control electrode coupled to the first node, the fourth transistor being coupled between the second node and the fourth node;

a first potential defining circuit, having a first input terminal and being coupled to the third node, for defining a potential of the first node in response to a signal applied to the first input terminal;

a second potential defining circuit, having a second input terminal and being coupled to the fourth node, for defining a potential of the second node in response to a signal applied to the second input terminal;

a fifth transistor having a fifth control electrode and being coupled to a source of a second potential and to the third node; and

a potential detecting circuit for detecting the potential of the first node and causing the fifth transistor to be conductive when the potential of the first node is less than a middle potential between the first potential and the second potential.

5,192,879

MOS TRANSISTOR OUTPUT CIRCUIT

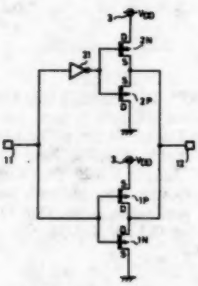
Kazuo Aoki, and Daisuke Shichinohe, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 25, 1991, Ser. No. 765,577

Claims priority, application Japan, Nov. 26, 1990, 2-324277

Int. Cl.[5] H03K *19/094, 17/16*

U.S. Cl. 307—451 **18 Claims**



1. An MOS transistor output circuit comprising:

an L-level output section connected between an output terminal of said MOS transistor output circuit and a point of ground potential; and

an H-level output section connected between said output terminal and a V_{DD} voltage supply terminal;

said L-level output section comprising:

a grounded-source first N-channel transistor having its gate connected to an input terminal of said MOS transistor output circuit, having its drain connected to said output terminal, and having its source connected to a point of ground potential; and

a source-follower second P-channel transistor having its gate connected to said input terminal through an inverter, having its drain connected to a point of ground potential, and having its source connected to said output terminal;

said H-level output section comprising:

a first P-channel transistor having its gate connected to said input terminal, having its drain connected to said output terminal, and having its source connected to said V_{DD} voltage supply terminal;

a source-follower second N-channel transistor having its gate connected to said input terminal through said inverter, having its drain connected to said V_{DD} voltage supply terminal, and having its source connected to said output terminal; and

a channel width-to-length ratio of said second P-channel and N-channel transistors being at least two times as large as that of said first P-channel and N-channel transistors.

5,192,880

HIGH-SPEED EMITTER COUPLED LOGIC CIRCUIT WITH LARGE CURRENT DRIVING CAPABILITY

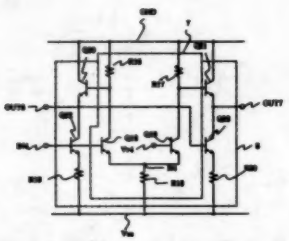
Teiji Dazai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 12, 1991, Ser. No. 791,065

Claims priority, application Japan, Nov. 13, 1990, 2-306556; Feb. 22, 1991, 3-28473

Int. Cl.[5] 307 *270*

U.S. Cl. 307—455 **10 Claims**



1. An emitter coupled logic circuit comprising

a) a switching gate state coupled with an input port, and operative to carry out a logical operation so as to produce a pair of intermediate signals complementary in logic level to each other,

b) an output stage having a first series combination of a first emitter follower, a first bipolar transistor and a first resistor coupled between first and second constant voltage lines different in voltage level from each other, and a second series combination of a second emitter follower, a second bipolar transistor and a second resistor coupled between said first and second constant voltage lines, and

c) a first output node and a second output node,

said first and second emitter followers having emitter nodes coupled with said first and second output nodes, respectively, said first and second emitter followers being controlled by said pair of intermediate signals, a base node of said first bipolar transistor being coupled with said input port, a base node of said second bipolar transistor being coupled with said first output node.

5,192,881

CIRCUIT WHICH REDUCES NOISE CAUSED BY HIGH CURRENT OUTPUTS

William C. Martin, Carrollton, Tex., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Jun. 28, 1991, Ser. No. 723,110

Int. Cl.[5] H03K *15/173, 17/16*

U.S. Cl. 307—468 **12 Claims**

1. A buffer circuit comprising:

input circuitry for receiving an input signal;

an output on which the buffer circuit places an output signal;

a reference voltage;

a power voltage;

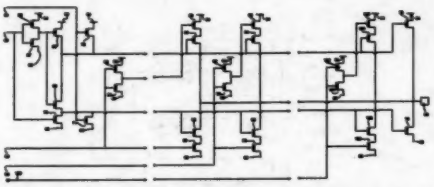
a first transistor having a first gate, a first source and a first drain, the first gate being coupled to the input circuitry,

the first source being coupled to the power voltage, and the first drain being coupled to the output;

a second transistor having a second gate, a second source and a second drain, the second gate being coupled to the input circuitry, the second source being coupled to the output, and the second drain being coupled to the reference voltage;

a third transistor having a third gate, a third source and a third drain, the third gate being electrically connected directly to the first gate, and the third drain being coupled to the output;

a fourth transistor having a fourth gate, a fourth source and a fourth drain, the fourth gate being electrically connected directly to the second gate, and the fourth source being coupled to the output;



a fifth transistor having a fifth gate, a fifth source and a fifth drain, the fifth source being coupled to the power voltage, and the fifth brain being coupled to the third source;

a sixth transistor having a sixth gate, a sixth source and a sixth drain, the sixth source being coupled to the fourth drain, and the sixth drain being coupled to the reference voltage; and

first selection circuitry means, coupled to the fifth gate and the sixth gate, for turning off the fifth transistor and the sixth transistor when a first amount of output current is selected, and for turning on the fifth transistor and the sixth transistor when a second amount of output current is selected.

5,192,882

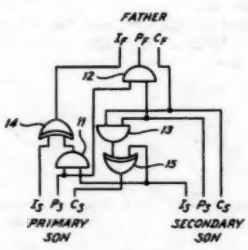
SYNCHRONIZATION CIRCUIT FOR PARALLEL PROCESSING

G. Jack Lipovski, Austin, Tex., assignor to Board of Regents, The University of Texas System, Austin, Tex.

Continuation of Ser. No. 359,075, May 30, 1989. This application Apr. 20, 1992, Ser. No. 871,584

Int. Cl.[5] H03K *19/21;* **G06F** *7/50*

U.S. Cl. 307—471 **20 Claims**



1. A logic operation circuit comprising:

circuit input C_f and circuit outputs I_f and P_f of a father;

circuit inputs I_s and P_s, and circuit output C_s of a primary son of said father; and,

circuit inputs I_s and P_s, and circuit output C_s of a secondary son of said father;

I_s of said primary son being a first input to a first exclusive-OR circuit;

P_s of said primary son being a first input to a first AND circuit and being a first input to a second AND circuit;

I_s of said secondary son being a second input to said first AND circuit and being a first input to a second exclusive-OR circuit;

P_s of said secondary son being a second input to said second AND circuit and being a first input to a third AND circuit;

C_f of said father being a second input to said third AND circuit and being C_s of said secondary son;

an output from said first exclusive-OR circuit being I_f of said father;

an output from said second AND circuit being P_f of said father;

an output from second exclusive-OR circuit being C_s of said primary son;

an output for said first AND circuit being a second input to said first exclusive-OR circuit; and

an output for said third AND circuit being a second input to said second exclusive-OR circuit.

5,192,883

INTERFACE CIRCUIT FOR SEMICONDUCTOR MEMORY DEVICE

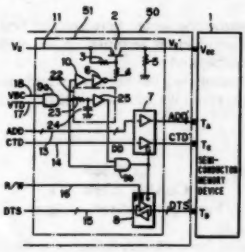
Masatoshi Kimura, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 14, 1991, Ser. No. 744,749

Claims priority, application Japan, Aug. 30, 1990, 2-231123

Int. Cl.[5] H03K *19/0175*

U.S. Cl. 307—475 **9 Claims**



1. An interface circuit for a semiconductor memory device including a semiconductor integrated circuit, said interface circuit comprising:

a control signal input end for receiving a control signal;

a power input line for supplying a power supply voltage to said semiconductor memory device;

power supply control means for connecting/disconnecting said power supply voltage in response to said control signal

input/output buses connected to said semiconductor memory device;

bus control means for connecting/disconnecting said input-/output buses to said semiconductor memory device in response to a delay control signal and which operates at a higher speed than said power supply control means;

a delay circuit for delaying said control signal from said input end a predetermined delay time, said predetermined delay time being a function of the difference in operating speed between said power supply control means and said bus control means; and

delay control signal supply means for supplying said control signal, delayed by said delay circuit, to said bus control means as said delay control signal, wherein

said power supply voltage is applied to said semiconductor memory device prior to inputting data on said input/out-

put buses to said semiconductor memory device, preventing latch-up of said semiconductor integrated circuit.

5,192,884

ACTIVE FILTER HAVING REDUCED CAPACITOR AREA BUT MAINTAINING FILTER CHARACTERISTICS

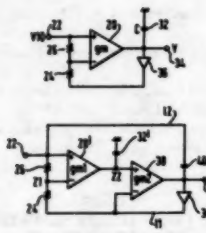
Takahiro Kusano, Saitama, Japan, assignor to Kabushiki Kaisha Toshiba, Japan

Filed Oct. 15, 1990, Ser. No. 597,043

Claims priority, application Japan, Nov. 30, 1989, 1-312617

Int. Cl.[5] H03K *5/00;* **H04B** *1/10*

U.S. Cl. 307—520 **6 Claims**



1. An active filter in an integrated circuit comprising:

a differential circuit voltage-controlled current source including a first and a second input terminal and an output terminal, said first input terminal being connected to a first signal source for supplying a signal to be filtered by the active filter;

a first resistor connected between the output terminal and the second input terminal of the voltage controlled current source;

a second resistor connected between the first input terminal and the second input terminal of the voltage-controlled current source; and

a capacitor connected between a second signal source and the output terminal of the voltage controlled current source.

5,192,885

CLAMP CIRCUIT

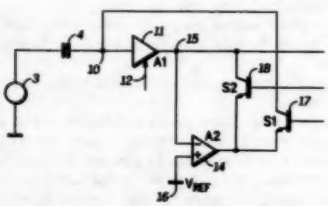
Michael J. Gay, Vaud, Switzerland, assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 25, 1991, Ser. No. 796,979

Claims priority, application United Kingdom, Dec. 13, 1990, 9027044

Int. Cl.[5] H03K *5/08;* **H04N** *9/64, 5/18*

U.S. Cl. 307—555 **5 Claims**



1. A clamp circuit for establishing a predetermined clamp voltage, the circuit comprising a signal input terminal for receiving an input signal, a first amplifier having an input terminal and an output terminal; the input terminal of the first amplifier being capacitively coupled to the signal input terminal; means for selecting operation of the first amplifier; an operational amplifier having a first input coupled to the output of the first amplifier and a second input for receiving a reference voltage and first and second selectively operable feedback loops coupled between the output of the operational amplifier and the inputs of the first and operational amplifiers respectively, whereby the output of the first amplifier may be selectively clamped to the predetermined clamp voltage in dependence upon the selective operation of the feedback loops and the first amplifier.

5,192,886

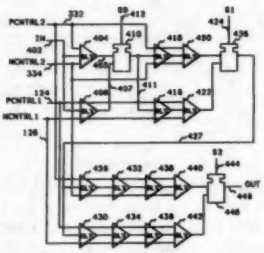
SUB-NANOSECOND CALIBRATED DELAY LINE STRUCTURE

Gary D. Wetlaufer, Longmont, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 494,020, Mar. 15, 1990, abandoned. This application Feb. 7, 1991, Ser. No. 652,149

Int. Cl.[5] H03K *5/159, 3/01*

U.S. Cl. 307—595 **6 Claims**



1. A digital delay circuit for delaying an input signal to provide a delayed output signal, said delay circuit having a delay control input bit, said delay circuit comprising:

an incremental delay circuit having an input connected to said input signal, a delay control input connected to an incremental control signal, and having a first incremental control output signal,

a reference delay circuit having an input connected to said input signal, a delay control input connected to a reference control signal, and having a first reference control output signal,

means responsive to said delay control input bit for selecting said first incremental control output signal or said first reference control output signal to provide said output signal.

5,192,887

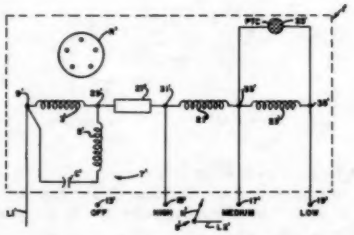
STARTING MULTI-SPEED MOTORS AT A LOW SPEED CONNECTION

Kenneth R. Theis, Collinsville, Ill., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Sep. 23, 1991, Ser. No. 764,185

Int. Cl.[5] H02K *11/00;* **H02P** *1/34, 7/36, 1/42*

U.S. Cl. 310—68 C **12 Claims**



1. An electric motor having at least a "HIGH" speed of operation and a "LOW" speed of operation, the motor having

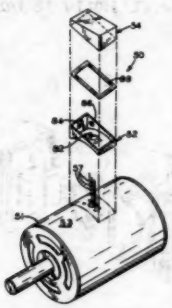
a main electrical winding, an additional electrical winding series connected with the main electrical winding, and a circuit branch comprising a series connected capacitor and auxiliary winding, the main winding being connected in parallel with the branch circuit means for applying power to the main winding for HIGH speed operation of the motor and for applying power across at least the main winding and the additional winding for LOW speed operation of the motor, and a temperature sensitive element connected in parallel across at least the additional electrical winding to improve the starting torque characteristics of the motor when it is started in other than its HIGH speed operating condition, the power applying means including switch means for selecting the motor operating speed.

5,192,888

MOTOR TERMINAL BOX

Mark F. Fleer, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Continuation of Ser. No. 543,643, Jun. 26, 1990, abandoned.
This application Sep. 13, 1991, Ser. No. 759,605
Int. Cl.[5] H02K 5/22; H02G 3/08
U.S. Cl. 310—71 12 Claims



1. A generally rectangular terminal box for mounting directly on a generally cylindrical surface segment of an electric motor housing, the terminal box comprising a one piece base and a cover, the base having a curved bottom surface preselectively contoured to conform to the curved surface of the electric motor housing and also having a wire accommodating opening therein, and further having four sidewalls including first and second intersecting sidewalls respectively having first and second means for receiving conduit feedwires, the sidewalls of the terminal box being dimensioned and shaped so that at least a portion of each of the first and second conduit feedwire receiving means is substantially unobstructed by any sidewall of the terminal box base when the cover is removed to thereby permit feedwires to be pulled in an essentially unobstructured path through terminal box feedwire receiving means.

5,192,889

ULTRASONIC MOTOR DRIVER

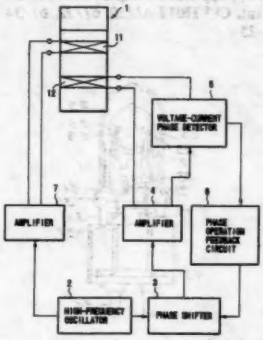
Osamu Myohga, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 26, 1992, Ser. No. 841,551
Claims priority, application Japan, Mar. 4, 1991, 3-37007
Int. Cl.[5] H01L 41/08
U.S. Cl. 310—316 3 Claims

1. An ultrasonic motor drive, comprising:

an ultrasonic motor of the standing wave type using a longitudinal/torsional vibrator assembly as a stator, excited by a voltage of a high-frequency as an ultrasonic frequency and having first and second piezoelectric elements for respectively generating longitudinal and torsional vibrations,

voltage-current phase difference detecting means for detecting a phase difference between a voltage and a current applied to said second piezoelectric element, and



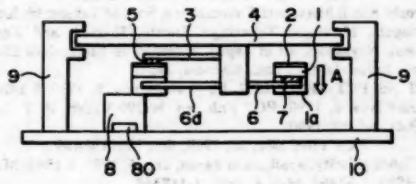
phase shifting means for adjusting phases of two voltages applied to said first and second piezoelectric elements so that the phase difference detected by said voltage-current phase difference detecting means is minimized.

5,192,890

VIBRATION DRIVEN ACTUATOR

Atsushi Kimura, Yokohama; Hiroyuki Seki, Urawa, and Yoshifumi Nishimoto, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 587,785, Sep. 25, 1990, abandoned. This application Jun. 3, 1992, Ser. No. 892,483
Claims priority, application Japan, Sep. 25, 1989, 1-111859[U]; Nov. 6, 1989, 1-288148
Int. Cl.[5] H01L 41/08
U.S. Cl. 310—323 20 Claims



1. A vibration wave driven apparatus, comprising:

a supporting member having a first contact surface with a predetermined surface area and a second contact surface with a predetermined surface area, said surface area of said second contact surface being less than said surface area of said first contact surface;

a vibration member having a frictional surface in contact with said first contact surface of said supporting member and an electro-mechanical energy conversion member for generating a travelling vibration wave in response to an applied electrical signal, the vibration wave causing relative movement between said vibration member and said supporting member; and

a bottom plate having a surface which comes in contact with said second contact surface of said supporting member, wherein

said supporting member is fixed to a predetermined position on said bottom plate.

5,192,891

METAL HALIDE LAMP

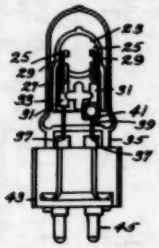
Atsushi Matsuura; Shinji Isukai, and Hisanori Sano, all of Kanagawa, Japan, assignors to Toshiba Lighting & Technology Corporation, Tokyo, Japan

Filed Jan. 7, 1992, Ser. No. 817,649

Claims priority, application Japan, Jan. 11, 1991, 3-18226

Int. Cl.[5] H01J *61/20, 61/22, 61/34*

U.S. Cl. 313—25 **15 Claims**



1. A metal halide lamp, comprising:

a discharge glass tube defining a discharge space;

a pair of electrodes provided in the discharge glass tube for generating a discharge therebetween;

mercury in the glass tube for generating the discharge;

halogen fillings comprising bromine and iodine contained in the discharge glass tube, the mol ratio of the bromine to the halogen fillings being not less than 0.3; and

metals reacting with the halogen and emitting light in the discharge glass tube by the discharge, the metal comprising tin, sodium, thallium and indium, the tin being contained in the discharge glass tube in an amount of 1 to 14 μ-mol per 1 cc of discharge space, each mol ratio of the amount of the sodium, the thallium and the indium to the amount of the tin being not less than 0.2.

5,192,892

PICTURE DISPLAY DEVICE WITH A VIBRATION-PREVENTING ELEMENT

Hiroshi Aono; Mitsunori Yokomakura, both of Takatsuki; Keiji Nagata, Hirakata; Takatsugu Kurata, Ibaraki, and Kanji Imai, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

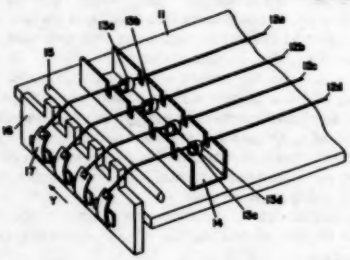
PCT No. PCT/JP89/01317, § 371 Date Nov. 6, 1990, § 102(e) Date Nov. 6, 1990, PCT Pub. No. WO90/07788, PCT Pub. Date Jul. 12, 1990

PCT Filed Dec. 28, 1989, Ser. No. 576,469

Claims priority, application Japan, Jan. 6, 1989, 1-1546; Mar. 15, 1989, 1-62462; May 9, 1989, 1-115344

Int. Cl.[5] H01J *29/04, 29/70, 31/12*

U.S. Cl. 313—422 **21 Claims**



1. A linear cathode apparatus comprising:

a back electrode extending along a first plane;

at least one linear cathode provided along said back electrode in a plane parallel to said first plane;

holding means for holding said linear cathode at a predetermined height above a surface of said back electrode;

at least one vibration prevention element, formed of inorganic materials, each having inner surfaces defining a hole of much larger diameter than an outer diameter of said linear cathode, each said vibration prevention element being freely engaged around each said linear cathode at one end part of said linear cathode, with only a weight of said vibration prevention element holding it on said linear cathode to allow its free movement; and

restricting means for restricting an extent of said free movement of said vibration prevention element, in a direction along which said linear cathode extends, within predetermined limits outside of a working picture area.

5,192,893

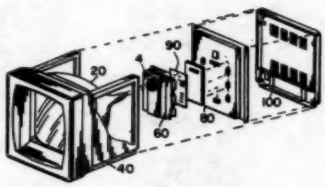
ELECTROMAGNETIC RADIATION SHIELD FOR A VIDEO AMPLIFIER

Daniel J. J. Velasco, Hudson; Dennis C. Robinson, Marlboro; Jeffrey P. Copeland, Holden, and Ricardo L. Fernandez, Beverly, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Apr. 6, 1992, Ser. No. 863,615

Int. Cl.[5] H01J *1/52, 5/02*

U.S. Cl. 315—85 **9 Claims**



1. A video display system comprising:

a cathode ray tube having a stem with a plurality of stem leads;

an electrically conductive electromagnetic shielding enclosure having an access opening;

a video amplifier positioned within the enclosure;

a socket coupled to the stem leads of the cathode ray tube, the socket being positioned at the access opening of the enclosure by the stem leads;

a plurality of unshielded video amplifier wires corresponding to the plurality of stem leads, one end of each of the video amplifier wires being coupled to the socket, the other end of each of the video amplifier wires being coupled to the video amplifier, the one end of each of the video amplifier wires being positioned at the access opening and the remainder of each of the video amplifier wires being positioned within the enclosure, the enclosure being effective to retard the propagation of electromagnetic radiation emitted from the video amplifier wires and from the video amplifier.

5,192,894

DEVICE FOR THE SUPPRESSION OF ARCS

Götz Teschner, Gelnhausen, Fed. Rep. of Germany, assignor to Leybold Aktiengesellschaft, Hanau, Fed. Rep. of Germany

Filed Dec. 13, 1991, Ser. No. 807,278

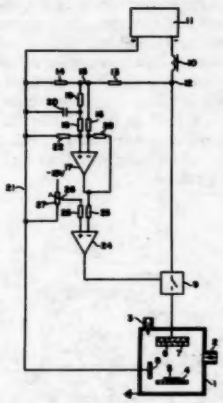
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1991, 4127504

Int. Cl.[5] H05H *1/24*

U.S. Cl. 315—111.21 **6 Claims**

1. Circuit configuration for the suppression of arcs in a

plasma wherein to a plasma path a voltage source is connected, comprising a means for sensing an instantaneous value of the voltage of the plasma path, a means for generating a mean plasma voltage determined over a given time and a means for



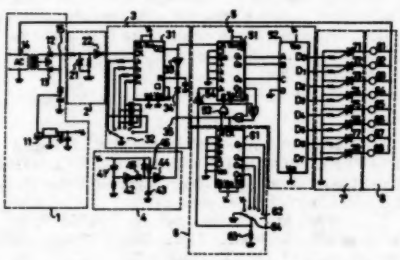
comparing said instantaneous value of the voltage of the plasma path with the mean plasma voltage and for isolating said voltage source (11) from said plasma path if the difference between the instantaneous value of the plasma voltage and the mean plasma voltage exceeds a given value.

5,192,895

SYNCHRONOUSLY-CONTROLLED LIGHT STRING

Ming C. Chang, Tainan Hsien, Taiwan, assignor to Taiwan Genl Electronics Co., Ltd., Tainan Hsien, Taiwan

Filed Mar. 16, 1992, Ser. No. 851,332
Int. Cl.[5] H05B *37/00, 39/00*
U.S. Cl. 315—201 **2 Claims**



1. A synchronously-controlled light string comprising a plurality of light string units, each of which comprises a plug and a socket disposed in respective ends thereof for coupling with those of adjacent said light string, a plurality of flashable lights, and a synchronous control circuit for receiving a power source frequence as actuating pulses to control said lights to flash with a predetermined frequency;

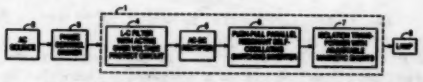
each said synchronous control circuit comprising a rectifier, a frequency divider, a shifting circuit, a driving circuit, and a resetting circuit, such that when an ac power source is input to said rectifier, the sine wave thereof is converted to a square wave which is then input into said frequency divider to obtain a required clock signal which triggers said shifting circuit and said driving circuit to drive said lights to flash with a predetermined frequency; said resetting circuit resetting a corresponding said frequency divider and said shifting circuit when power is initially applied thereby synchronizing each said light string unit.

5,192,896

VARIABLE CHOPPED INPUT DIMMABLE ELECTRONIC BALLAST

Kong Qin, 13928 Mustang Hill La., Gaithersburg, Md. 20878

Filed Apr. 10, 1992, Ser. No. 866,514
Int. Cl.[5] H05B *41/29, 41/391*
U.S. Cl. 315—224 **9 Claims**



1. A dimmable electronic ballast for one or more gas discharge lamps, each lamp including a filament, comprising:

L-C filter means for receiving a variable chopped AC input current from an AC power source and for smoothing said received variable chopped AC current and for outputting smoothed AC current;

AC-DC rectifier means, connected to receive the smoothed AC current output from the L-C filter means and acting to convert the smoothed AC current to DC voltage and outputting said DC voltage;

push-pull parallel resonant self-oscillating switching inverter means, connected to receive the DC voltage output from the AC-DC rectifier means, for generating and outputting a sinusoidal high frequency voltage; and

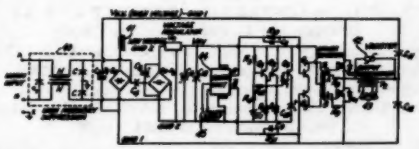
isolation transformer means, connected to receive the sinusoidal high frequency voltage output from the switching inverter means, for adjusting the light level of the gas discharge lamp.

5,192,897

ELECTRONIC HIGH FREQUENCY CONTROLLED DEVICE FOR OPERATING GAS DISCHARGE LAMPS

Eshan Vossough, Dee Why, and Mohammed A. Helal, Harbord, both of Australia, assignors to Minitronics Pty. Ltd., Brookvale, Australia

Continuation of Ser. No. 758,167, Sep. 11, 1991, abandoned, which is a continuation of Ser. No. 583,001, Sep. 14, 1990, abandoned, which is a continuation of Ser. No. 453,228, Dec. 14, 1989, abandoned, which is a continuation of Ser. No. 312,411, Feb. 17, 1989, abandoned, which is a continuation of Ser. No. 204,936, Jun. 6, 1988, abandoned, which is a continuation of Ser. No. 99,647, Sep. 23, 1987, abandoned, which is a continuation of Ser. No. 935,114, Nov. 26, 1986, abandoned, which is a continuation of Ser. No. 788,692, Oct. 18, 1985, abandoned, which is a continuation of Ser. No. 541,335, Sep. 13, 1983, abandoned. This application Apr. 16, 1992, Ser. No. 869,867
Claims priority, application Australia, Jan. 15, 1982, PF2301
Int. Cl.[5] H05B *41/36*
U.S. Cl. 315—308 **6 Claims**



1. A high frequency electronic ballast for gas discharge lamps comprising a controlled oscillator providing two complementary high frequency outputs which are variable in frequency under at least one control input to said oscillator, said complementary outputs inputing to driver means which in turn provides an input to a non-resonant inverter, said inverter

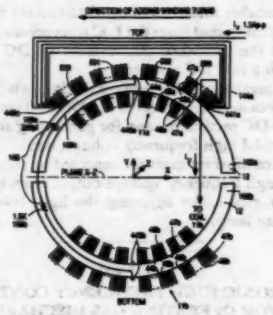
having a substantially constant duty cycle, said inverter having a frequency variable as a function of the controlled oscillator frequency, the output of said inverter being a source to a transformer or choke which enables the inverter to directly drive a gas discharge lamp, said controlled oscillator and driver means being adapted to be supplied from a low d.c. voltage source and said inverter being adapted to be supplied from a high d.c. voltage source, and wherein dimming control is provided by said at least one control input to the oscillator to vary the frequency of the oscillator and thereby vary the frequency of the inverter and the light output of the gas discharge lamp.

5,192,898

DEFLECTION YOKE WITH RINGING SUPPRESSION MEANS

Alain Dossot, Chevigny Saint Sauveur, and Jean-Pierre Fourché, Dijon, both of France, assignors to Videocolor, Paris la Defense, France

Filed Jun. 6, 1991, Ser. No. 710,880
Int. Cl.[5] H01J *29/56*
U.S. Cl. 315—370 **6 Claims**



1. A deflection yoke for producing electron beam scanning in a cathod ray tube of a video display, comprising:

a core made of a permeable magnetic material;

a toroidal, first vertical deflection coil cooperating with said core for producing a vertical deflection field, said first vertical deflection coil having a plurality of winding layers wound around said core in a multiple layer winding technique;

a horizontal deflection coil for producing a horizontal deflection field; and

a ringing suppressing impedance coupled to an intermediate terminal between end winding turns of a winding layer of said first vertical that is remote from a center winding layer of said first vertical deflection coil for suppressing ringings that are produced in said first vertical deflection coil by said horizontal deflection field.

5,192,899

ELECTROMAGNETICALLY POWERED ROTARY MOTOR APPARATUS AND METHOD

Alvin B. Simpson, 437 W. Scott, Clovis, Calif. 93612, and Charley W. Bisel, 286 E. 12th Ave., Broomfield, Colo. 80501

Continuation-in-part of Ser. No. 524,189, May 17, 1990, Pat. No. 5,036,930. This application Aug. 5, 1991, Ser. No. 740,091
Int. Cl.[5] H02K *37/12*; B60L *15/20*
U.S. Cl. 318—139 **9 Claims**

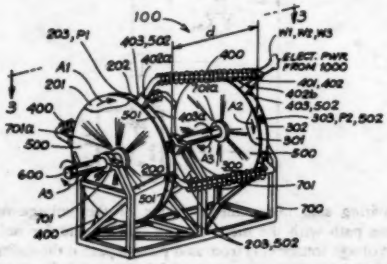
1. A rotary motor apparatus, said apparatus comprising:

energy source means for powering said apparatus;

at least one electromagnet means electrically coupled and responsive to said energy source means for producing controlled magnetic fields; and

at least one rotatable permanent magnet means having a mechanically coupled shaft for producing rotation of said shaft and converting energy from said energy source means to work, said rotatable permanent magnet means being mechanically disposed proximate said electromagnet means for being magnetically coupled by said controlled magnetic fields for producing said rotation, said electromagnet means comprising a coil member and a fixedly and centrally located magnetic core member with respect to said coil member,

said energy source means comprises a first energy source circuit for producing a first magnetic field on said core member and a second energy source circuit for producing a second magnetic field on said core member, said first magnetic field and said second magnetic field coacting to produce a composite magnetic field that effects rotationally cranking said shaft,



said first magnetic field comprising a magnetic field that polarizes an end of said core member at a first polarity that is the same as a permanent polarity on a plurality of permanent magnet members of said at least one rotatable permanent magnet means, and

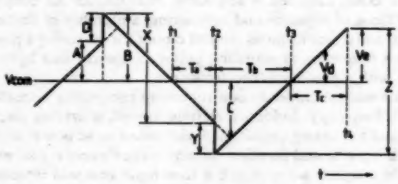
said second magnetic field comprises a controlled on/off neutralizing magnetic field that neutralizes said first magnetic field during on-states of said second energy source circuit such that said composite magnetic field has no magnetic effect on said at least one rotatable permanent magnet means and that during an off-state facilitates said composite magnetic field having a rotational driving magnetic effect on said at least one rotatable permanent means such that repeated rotational urging of said at least one rotatable permanent magnet means effects said cranking of said crank shaft.

5,192,900

METHOD AND APPARATUS FOR DRIVING A BRUSHLESS MOTOR USING FEEDBACK CONTROL

Yasuhiro Ueki, Sagamihara, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed May 30, 1991, Ser. No. 706,594
Claims priority, application Japan, Jun. 5, 1990, 2-146590
Int. Cl.[5] H02P *6/00*
U.S. Cl. 318—254 **8 Claims**



7. A method of driving a brushless dc motor having polyphase stator windings and a rotor, the polyphase stator windings having first ends and second ends, the first ends being

connected in common at a common junction, wherein two of the second ends are sequentially selected and a drive current is supplied between the selected two second ends to rotate the rotor, the rotor having magnetic poles arranged in a predetermined configuration, the method comprising the steps of:

sequentially measuring a voltage at one of the second ends when said one of the second ends is not supplied with the drive current, and thereby obtaining measured values of the voltages at the second ends respectively; and

controlling a rotation of the rotor in response to the measured values of the voltages at the second ends,

said step of controlling a rotation comprising:

(1) measuring a difference "D" between values of the measured value of a currently-measured one of the voltages at the second ends which occurs before and after a first change of a supply of the drive current to the stator windings respectively;

(2) measuring a difference "X" between the measured value of a currently-measured one of the voltages at the second ends which occurs after the first change of the supply of the drive current to the stator windings and the measured value of a currently-measured one of the voltages at the second ends which occurs before a second change of the supply of the drive current to the stator windings;

(3) measuring a difference "Y" between values of the measured value of a currently-measured one of the voltages at the second ends which occurs before and after the second change of the supply of the drive current to the stator windings respectively;

(4) calculating values "Z" given as $Z=X-(D/2)+Y$ or $Z=X+(D/2)-Y$; and

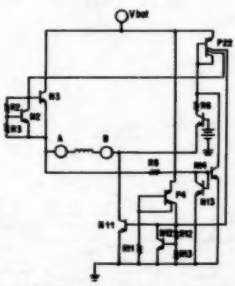
(5) during a period after the second change of the supply of the drive current to the stator windings, performing a third change to the supply of the drive current to the stator windings when the measured value of a currently-measured one of the voltages at the second ends becomes equal to one of the values "Z".

5,192,901

SHORT CIRCUIT PROTECTION

Walter S. Gontowki, Jr., Thompson, Conn., assignor to Cherry Semiconductor Corporation, East Greenwich, R.I.

Filed Mar. 16, 1990, Ser. No. 494,605
Int. Cl.[5] H02K *17/34*
U.S. Cl. 318—430 **8 Claims**



1. Transistor power output stage for driving an electric motor load characterized by having two sides from a pair of supply leads comprising:

first output transistor means connected between one side of the load and one of said supply leads providing current gain for energizing said load at a current level which is a function of the level of drive current provided to said output transistor means;

second output transistor means connected between the other side of the load and the other one of said supply leads and providing current gain for energizing said load;

means for providing drive current to said first output transistor means only at a first level which is independent of the voltage at said one side of the load; and

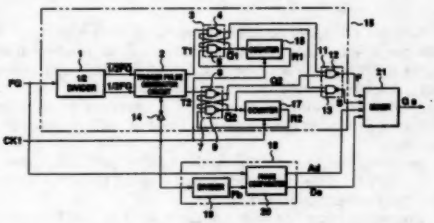
voltage sensing means for providing drive current at a level which is substantially greater than said first level to said first output transistor means when the voltage at said one side of said load is close to that on said one supply lead and for also providing drive current to said second output transistor means.

5,192,902

VELOCITY/PHASE CONTROLLER FOR DC SERVO MOTOR

Masao Mizumoto; Kouichirou Ougino; Tsutomu Shimazaki, all of Oura; Tomohiro Inoue, and Yasuhiro Okada, both of Yonago, all of Japan, assignors to Sanyo Electric Co., Ltd. and Matsushita Electric Industrial Co., Ltd., both of Osaka, Japan

Filed Nov. 1, 1990, Ser. No. 607,673
Claims priority, application Japan, Nov. 10, 1989, 1-292819
Int. Cl.[5] G05B *13/00*
U.S. Cl. 318—561 **11 Claims**



1. A velocity/phase controller for a DC servo motor comprising:

(a) a velocity control circuit including

a trigger pulse generator for producing a trigger pulse in synchronization with a reference clock signal from a rotation detection signal detected in response to a rotation of the DC servo motor,

a counter for counting said reference clock signal and outputting a count termination signal when a counted value reaches a preset value, and

a velocity control signal generator for outputting, on a basis of the trigger pulse and the count termination signal, a fast signal when said DC servo motor is rotating faster than a predetermined rotating speed and a slow signal when said DC servo motor is rotating slower than said predetermined rotating speed;

(b) a phase control circuit for outputting an advance signal when a phase-angle of said DC servo motor is advanced relative to a predetermined value and a delay signal when the phase angle of said DC servo motor is retarded relative to said predetermined value in response to a phase difference between a reference signal which represents said DC servo motor rotating at said predetermined rotating speed and said rotation detection signal;

(c) a mixer for outputting a rotation control signal for said DC motor by generating a first output having a first amplitude range and a second output having a second amplitude range smaller than the first amplitude range,

the first output being generated from at least one of said fast signal and said slow signal and the second output being generated from at least one of said advance signal and said delay signal,

said mixer performing a mixing operation so that a control function of the rotation control signal is preponderantly due to the contribution of the first output.

5,192,903

EQUIPMENT FOR TRANSPORTING A LOAD

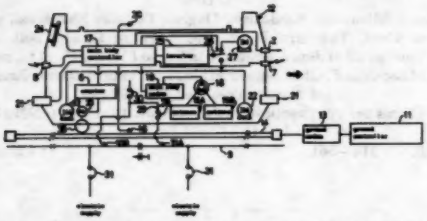
Hiroaki Kita; Koichi Murata, both of Kasugai, and Mamoru Nakano, Komaki, all of Japan, assignors to Daifuku Co., Ltd., Japan

Continuation of Ser. No. 775,538, Oct. 15, 1991, abandoned, which is a division of Ser. No. 720,637, Jun. 25, 1991, Pat. No. 5,134,353. This application Jun. 30, 1992, Ser. No. 908,436

Claims priority, application Japan, Jul. 10, 1990, 2-183472; Jul. 19, 1990, 2-192500

Int. Cl.[5] B62D *1/28*; G06F *15/50*

U.S. Cl. 318—587 3 Claims



1. Load transport equipment provided with a plurality of self-propelled trucks self-propelled along a predetermined route to transport a load, said self-propelled trucks each having, detecting means provided at the front of said self-propelled truck and for detecting the existence of an object within a predetermined region in front of said self-propelled truck,

receiving means provided on the front of said self-propelled truck for detecting a first signal emitted from the front of said self-propelled truck,

projecting means provided at the rear of said self-propelled truck for projecting a second signal toward a remote region far from said predetermined region at the rear of said self-propelled truck,

means for detecting a curved portion at said predetermined route, and

control means which, when said curve detecting means does not operate and both said object detecting means and receiving means do not operate, drives said self-propelled truck at high speed, when said receiving means only operates, drives said self-propelled truck at a first low speed, when said object detecting means operates, stops said self-propelled truck, when said curve detecting means operates and said receiving means does not operate, drives said self-propelled truck at a second low speed, and when said receiving means operates, stops said self-propelled truck.

5,192,904

RECHARGEABLE BATTERY CONVERSION KIT

Steven B. Leiserson, 10845 Wheatlands, Ste. C, Santee, Calif. 92071

Continuation-in-part of Ser. No. 793,122, Nov. 18, 1991. This application May 22, 1992, Ser. No. 887,479

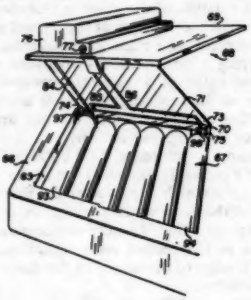
Int. Cl.[5] H01M *2/10*

U.S. Cl. 320—2 12 Claims

1. The combination of an electrical device having a compartment shaped and dimensioned to hold at least a first battery having a positive pole and a negative pole, said compartment having an opening sized to allow loading and unloading said first battery, positive and negative terminals protruding from lateral sections of said compartment, said terminals being positioned to contact said poles and wired to carry electrical currents form said poles to electrical circuits in said device, and a removable cover shaped and dimensioned to close said opening, a rechargeable power supply assembly which comprises:

a support member;

a current conducting means secured at a first end to said support and having first and second tips at an opposite end, each tip being shaped and dimensioned for insertion between one of said poles and one of said terminals, each of said tips having a terminal-contact area on a side and a pole-contacting area on an opposite side; and



an electrical circuit on said support member for feeding current from a remote current source to said poles and terminals via said current conducting means.

5,192,905

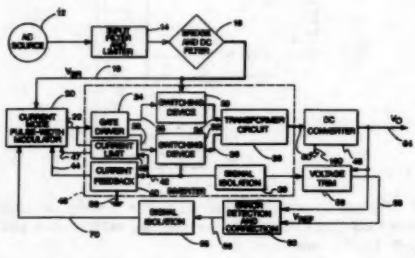
CHARGING VOLTAGE CONTROL AND CURRENT LIMIT FOR BATTERY CHARGERS

Richard A. Karlin, Chicago, Ill., and Hussein I. Bittar, Dearborn, Mich., assignors to MagneTek, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 634,093, Dec. 24, 1990. This application Sep. 23, 1991, Ser. No. 763,630

Int. Cl.[5] H02J *1/04*

U.S. Cl. 320—23 22 Claims



1. In a battery charger of the type having an output charging voltage which remains substantially constant over a relatively wide output charging current range, the improvement in combination therewith comprising voltage trim means for stepwise increasing the output charging voltage when the output charging current decreases below a predetermined value.

5,192,906

SWITCHING REGULATOR WITH CURRENT LIMITING SHUTDOWN

Adolf Nathan, Backnang, Fed. Rep. of Germany, assignor to ANT Nachrichtentechnik GmbH, Backnang, Fed. Rep. of Germany

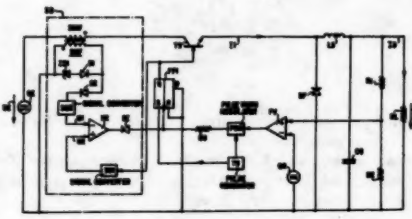
PCT No. PCT/DE90/00157, § 371 Date Sep. 9, 1991, § 102(e) Date Sep. 9, 1991, PCT Pub. No. WO90/10972, PCT Pub. Date Sep. 20, 1990

PCT Filed Mar. 5, 1990, Ser. No. 752,687

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1989, 3907410

Int. Cl.[5] G05F 1/40

U.S. Cl. 323—284 8 Claims



1. A method of operating a switching regulator employing one of pulse width control and pulse frequency control of an actuator, the switching regulator including a current limiting device which receives a signal that is a function of current through the actuator comprising:

receiving in the current limiting device a signal that is a function of turn-on pulses for the actuator; and

blocking the actuator by means of the current limiting device using the signal that is a function of the turn-on pulses as a reference for the current limiting device if the signal that is a function of the turn-on pulses becomes smaller than the signal that is a function of the current through the actuator.

5,192,907

ELECTRONIC MODULE HANDLING DEVICE FOR AN AUTOMATIC TEST APPARATUS

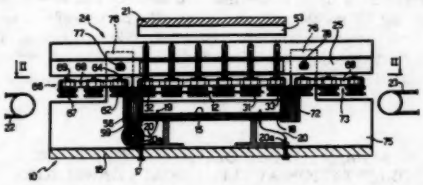
Luciano Bonaria, Turin, Italy, assignor to S.P.E.A. S.R.L., Turin, Italy

Filed Sep. 23, 1991, Ser. No. 763,929

Claims priority, application Italy, Sep. 25, 1990, 67713 A/90; Sep. 25, 1990, 67714 A/90

Int. Cl.[5] G01R 31/02

U.S. Cl. 324—158 F 18 Claims



1. An automatic test apparatus for electronic modules of which each module has a printed circuit plate provided with a plurality of test points, the apparatus comprising a fixed support; means for gripping and handling printed circuit plates of said electronic modules; an adapter removably mounted on said fixed support and provided with a plurality of probes arranged thereon in accordance with said plurality of test points on a printed circuit plate being tested in the apparatus; movable actuating means for moving said gripping means and causing said plate to move towards said adapter, said gripping and handling means including a pair of mechanism engaging a pair of opposite side edges of said plate, respectively, each of said mechanisms including a gripping member for gripping a respective one of said side edges, each gripping member, upon actuation of the respective mechanism by said actuating means, conveying said plate to a test position in which said test points are in alignment with said probes and said actuating means simultaneously displacing said gripping members for moving said plate in an aligned position with said probes so as to bring said test points in contact with said probes.

5,192,908

SEMICONDUCTOR DEVICE TESTING APPARATUS WITH POSITIONING MECHANISM

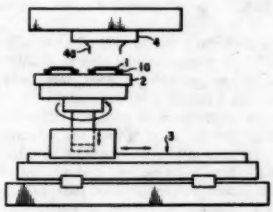
Junichirou Shibata, Urawa, Japan, assignor to Tokyo Electron Limited, Tokyo, Japan

Filed Dec. 31, 1991, Ser. No. 814,787

Claims priority, application Japan, Jan. 16, 1991, 3-3317

Int. Cl.[5] G01R 31/02

U.S. Cl. 324—158 F 14 Claims



1. A test apparatus for a semiconductor device having first and second adjacent sides which form an angle therebetween, comprising:

a test table having a support surface on which a setting position of the semiconductor device to be tested is formed;

testing means for testing the semiconductor device placed at the setting position;

a first guide provided on the test table so as to abut against the first side of the semiconductor device placed at the setting position;

a second guide provided on the test table so as to abut against the second side of the semiconductor device placed at the setting position;

fixing means, arranged on the test table, for fixing the semiconductor device placed at the setting position; and

driving means for moving the test table from a first position where the semiconductor device is placed on the support surface to a second position where the semiconductor device is tested by the testing means, and for linearly accelerating and moving the test table on a plane parallel to the support surface so as to generate vector components of a force for urging the first and second sides of the semiconductor device against the first and second guides, respectively;

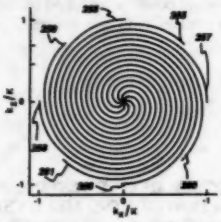
wherein the semiconductor device on the support surface is slid by an inertia force during acceleration of the test table and is positioned at the setting position by causing the first and second sides thereof to abut against the first and second guides, respectively.

5,192,909

SPECROSCOPIC LOCALIZATION USING PINWHEEL NMR EXCITATION PULSES

Christopher J. Hardy, Schenectady; Paul A. Bottomley, Clifton Park, and Harvey E. Cline, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 7, 1991, Ser. No. 637,910
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—309 **6 Claims**



1. A method for obtaining an NMR chemical-shift spectrum localized to a region of interest within a subject, the steps comprising:

a) producing a polarizing magnetic field over said subject;

b) applying a two-dimensional NMR selective excitation pulse to produce an excitation region encompassing said region of interest, the two-dimension selective excitation pulse including the substantially simultaneous application of:

i) an RF excitation pulse having a bandwidth encompassing a desired portion of the chemical-shift spectrum;

ii) a first magnetic field gradient pulse which varies in magnetic as a function of time; and

iii) a second magnetic field gradient pulse which varies in magnitude as a function of time and which is orthogonal to the first magnetic field gradient, in which the vector sum of the time-varying first and second magnetic-field gradient pulses defines a spiral path in k space;

c) acquiring an NMR signal from the excitation region in the absence of a readout magnetic-field gradient and storing the same;

d) repeating steps a), b) and c) to obtain and store a set of NMR signals in which the magnetic field gradient pulses applied during step b) are phase-shifted, causing each spiral path in k-space to be rotated for each repeat;

e) summing together the stored set of NMR signals from each repeat of steps a), b), and c) so that the signals from the region of interest add constructively while the signals outside the region of interest and inside the excitation region substantially cancel one another, to produce a final summed NMR signal from the region of interest, and

f) applying a Fourier transformation to the final summed NMR signal to produce a chemical-shift spectrum of sufficiently broad bandwidth to encompass peaks from the desired portion of the chemical-shift spectrum.

5,192,910

TEMPERATURE-CONTROL DEVICE FOR SAMPLES

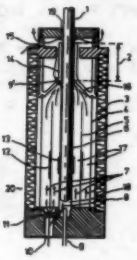
Phillip Hepp, Binningen; Werner H. Tschopp, Aesch/Forch; Martin Rindlisbacher, Zürich, and Oskar Schett, Uster, all of Switzerland, assignors to Spectrospin AG, Switzerland

Filed Jun. 10, 1991, Ser. No. 715,107
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1990, 4018734
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—315 **15 Claims**

1. Temperature-control device for NMR spectroscopy, comprising:

a vessel provided with an opening for receiving a measuring sample, at least one inlet opening for introduction of a temperature controlling fluid into the vessel, and one outlet opening for outflow of the temperature controlling fluid from the vessel;

flow channel means for separating the temperature controlling fluid into partial flows upon entry into the vessel and for guiding one partial flow of the temperature controlling



fluid past the sample as direct fluid flow, from a bottom to a top of the sample; and

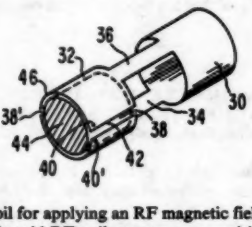
at least one by-pass channel means for guiding another of the partial fluid flows past an upper area of the sample in the form of a by-pass fluid flow.

5,192,911

NMR PROBE INCORPORATING RF SHIELDING OF SAMPLE

Howard D. W. Hill, Cupertino, and Michael D. Cummings, Sunnyvale, both of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Aug. 7, 1991, Ser. No. 741,720
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—322 **5 Claims**



1. An RF coil for applying an RF magnetic field to a sample disposed within said RF coil structure, comprising

(a) RF saddle coil means,

(b) lead means for connecting said RF saddle coil means with an RF source,

(c) floating shield means disposed between said sample and said RF saddle coil means to shield a portion of said sample proximate said lead means from said lead means, said floating shield means comprising a hollow cylindrical shell and a closure disk forming a cap on said shell.

5,192,912

APPARATUS FOR DETERMINING WIRING ORIENTATION AT ELECTRICAL CONNECTORS INCLUDING PLURAL LIGHT INDICATORS AND ROTARY SWITCH

Neldon L. Lemon, 3200 Terrace Dr., Moab, Utah 84532

Filed Aug. 12, 1991, Ser. No. 743,677
Int. Cl.[5] G01R *31/02*
U.S. Cl. 324—504 **8 Claims**

1. An apparatus for determining the orientation of each of a plurality of electrical leads coupled at a plurality of terminals

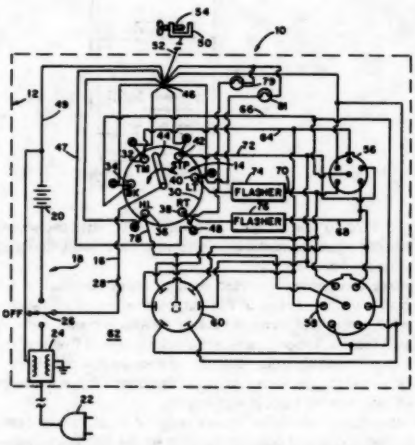
on a plug or receptacle portion of an electrical connector comprising:

housing means;

a plurality of connector means of different configurations supported by said housing means with each of said plurality of connector means having a plurality of terminals and adapted to receive a correspondingly configured mating connector means having a plurality of terminals thereon with selected ones of said plurality of terminals on said mating connector means each being coupled through each of a pluarlity of electrical leads to each of a plurality of electrically operatable means having separate selected functions:

rotary switch means supported by said housing and having a plurality of switch contacts corresponding to different switch positions and a rotary arm for selective connection to said switch contacts with each switch position being indicative of a particular function to be provided by one of said electrically operatable means;

first lead means connected to said rotary switch means contacts at each of the switch positions and to each of said



plurality of connector means at each terminal thereof disposed at a location thereon preselected to be coupled through a terminal on the mating connector means receivable by one of said plurality of connector means and one of said plurality of electrical leads to a selected one of said plurality of electrically operatable means;

lighting means connected to said rotary switch means contacts at each of said switch positions and to each of said plurality of terminals on said connector means; and

power supply means connectable to the rotary arm of said rotary switch means for providing an electrical current to any of said lighting means at any of said switch positions and any one of said plurality of electrial leads to one of said terminals on the mating connector means when coupled to a correspondingly configured one of said plurality of connector means for determining if the electrical lead coupled to a particular one of said terrminals on the mating connector means is coupled to the terminal of the mating connector means that is at a location thereon for providing the selected function as indicated by the lighting of a particular one of the lighting means.

5,192,913

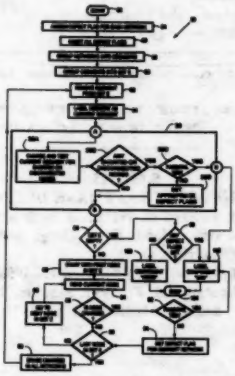
SEGMENTED CHARGE LIMITING TEST ALGORITHM FOR ELECTRICAL COMPONENTS

Rama R. Goruganthu; Thomas K. Myers, and Andrew W. Ross, all of Austin, Tex., assignors to Microelectronics and Computer Technology Corporation, Austin, Tex.

Continuation-in-part of Ser. No. 631,111, Dec. 20, 1990, Pat. No. 5,122,753. This application Mar. 16, 1992, Ser. No. 851,716

Int. Cl.[5] G01R *31/00*

U.S. Cl. 324—537 **35 Claims**



1. A method of electrically testing an electrical component with pads, comprising the steps of:

selecting a first portion of the component which is incapable of accumulating sufficient charge to cause any uncharged pad in the first portion to appear charged;

testing the first portion of the component by applying an electrical charge;

erasing accumulated charges in the component;

selecting a second portion of the component which is incapable of accumulating sufficient charge to cause any uncharged pad in the second portion to appear charged; and

testing the second portion of the component by applying an electrical charge, thereby preventing the accumulated charges from causing false readings.

5,192,914

CLOCK CONTROL CIRCUIT FOR SUPPRESSING CLOCK PULSES

Kiyoshi Sudo, Tokyo; Yasutomo Sakurai; Koichi Odahara, both of Kawasaki; Kenji Hoshi, Yokohama, and Hideharu Kanaya, Kawasaki, all of Japan, assignors to Fujitsu Limited, Japan

Filed Jul. 15, 1991, Ser. No. 731,127

Claims priority, application Japan, Jul. 20, 1990, 2-193738

Int. Cl.[5] H03K *17/00, 19/00*

U.S. Cl. 328—72 **13 Claims**

1. A clock control circuit for suppressing a clock pulse, wherein said clock pulse is provided in a plurality of devices which operate in synchronization with each other, said clock control circuit comprising:

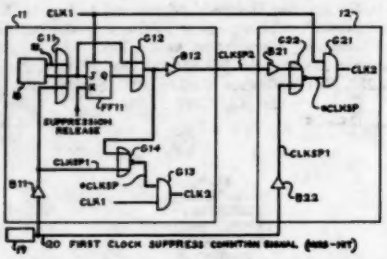
first detection means for detecting a first clock suppress condition and generating a first clock suppress condition signal;

second detection means for detecting a second clock suppress condition;

clock suppress signal generator means coupled to an output of the first and second detection means, said clock suppress signal generator means being provided in a selected device for generating a second clock suppress condition signal based on the detection of a clock suppress condition by said first or said second detection means; and

a plurality of clock suppression means provided in each of

the devices, each of said clock suppression means being connected to said first detection means and said clock



suppress signal generator means, for suppressing the clock pulse based on the first or second clock suppress signal.

5,192,915

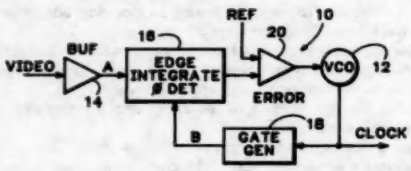
EDGE INTEGRATING PHASE DETECTOR

Alan E. Mathieu; Edward D. Wardzala, both of Portland, and Michael S. Overton, Aloha, all of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Continuation of Ser. No. 717,440, Jun. 19, 1991, abandoned. This application Jul. 27, 1992, Ser. No. 920,180

Int. Cl.[5] H03K *9/06, 5/13*

U.S. Cl. 328—133 **3 Claims**



1. A phase locked loop of the type having an oscillator for generating a system clock, the frequency of the oscillator being determined by a control signal derived from the system clock and a repetitive component of an input signal, comprising:

means responsive to the system clock for generating a gate signal having a duration equal to a portion of a transition of the repetitive component; and

means for integrating the transition in response to the gate signal to produce the control signal.

5,192,916

CHARGE-PUMP PHASE LOCKED LOOP CIRCUIT

Kevin W. Glass, San Jose, Calif., assignor to MOS Electronics Corporation, Sunnyvale, Calif.

Filed Sep. 20, 1991, Ser. No. 763,087

Int. Cl.[5] H04K *5/13;* **G05F** *5/00*

U.S. Cl. 328—155 **8 Claims**

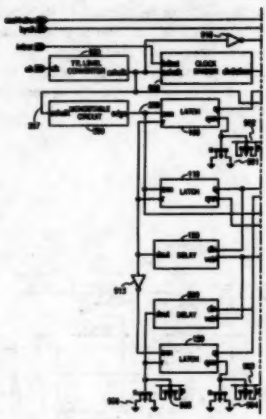
1. A phase locked loop circuit for providing a phase-stabilized output signal, said phase locked loop circuit comprising:

a first latch circuit having an output terminal that provides a first trigger signal having a first state and a second state, wherein said first trigger signal makes a transition from said first state to said second state in response to a transition of an input signal provided to said phase locked loop circuit;

a first variable delay circuit having a control terminal that receives a feedback signal to control the delay of said first variable delay circuit, said first variable delay circuit having an input terminal coupled to the output terminal of said first latch circuit and providing a first delay signal that is delayed with respect to said first trigger signal, wherein said first delay signal is provided to said first latch circuit to cause the first trigger signal to make a transition back to said first state from said second state;

a second latch circuit coupled to an output terminal of said first delay circuit for providing a second trigger signal having a first state and a second state wherein the second trigger signal makes a transition from said first state to said second state in response to a transition of said first delay signal;

a second variable delay circuit having a control terminal that receives said feedback signal to control the delay of said second variable delay circuit, said second variable delay circuit having an input terminal coupled to an output terminal of said second latch circuit and providing a second delay signal that is delayed with respect to said second trigger signal, wherein said second delay signal is



provided to said second latch circuit to cause the second trigger signal to make a transition back to said first state from said second state;

a phase comparator coupled to the output terminal of said first latch circuit and to the output terminal of said second latch circuit for generating said feedback signal, wherein said feedback signal causes the delays of said first and said second variable delay circuits to change if a transition of said first trigger signal is not coincident with a transition of said second trigger signal; and

an operational amplifier circuit coupled to an output terminal of said phase comparator and to the control terminals of said first and said second variable delay circuits, wherein said feedback signal is provided to said first and said second variable delay circuits through said operational amplifier.

5,192,917

CIRCUIT AND METHOD FOR DETECTING AN AMPLITUDE AND OFFSET DEVIATION OF TWO SINUSOIDAL SIGNALS

Ralf Schweigert, Adelsdorf, and Albrecht Donat, Dachsbach, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 3, 1991, Ser. No. 801,938

Claims priority, application European Pat. Off., Dec. 3, 1990, 90123125

Int. Cl.[5] H03B *1/00;* **H03K** *5/00, 5/08*

U.S. Cl. 328—162 **9 Claims**

1. A circuit for detecting an amplitude deviation and/or offset deviation of two similar sinusoidal signals S1 and S2, out of phase by approximately 90°, with a predetermined reference amplitude, comprising:

a first threshold stage, said first threshold stage accepting a signal based on S1 and supplying a first characteristic signal as condition A, when the signal S1 exceeds said predetermined reference amplitude;

a second threshold stage, said second threshold stage accepting a signal based of S2 and supplying a second characteristic signal as condition B, when said signal S2 exceeds the predetermined reference amplitude;

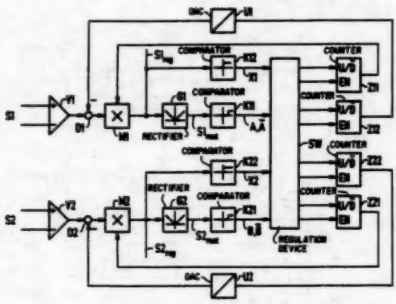
a third threshold stage, said third threshold stage accepting said signal based of S1, detecting zero passages of said signal based on S1 both in an upward and a downward direction, and supplying trigger times 1_{up} and 1_{down}, respectively based on the detected zero passages;

a fourth threshold stage, said forth threshold stage accepting said signal based of S2, detecting zero passages of the signal S2 both in an upward and a downward direction, and supplying trigger times 2_{up} and 2_{down}, respectively based on the detected zero passages; and

a regulating device, said regulating device accepting said first characteristic signal, said second characteristic signal, said trigger times 1_{up}, 1_{down}, 2_{up}, and 2_{down} (SW)

producing an output signal indicating that an amplitude of S1 is greater than the reference amplitude when condition A is met at two consecutive trigger times 2_{up} and 2_{down};

producing an output signal indicating that an amplitude of



S1 is less than the reference amplitude when condition A is not met at two consecutive trigger times 2_{up} and 2_{down},

producing an output signal indicating that an offset of S1 is too great when condition A is met at trigger time 2_{up} and condition A is not met at trigger time 2_{down}, wherein trigger times 2_{up} and 2_{down} are consecutive,

producing an output signal indicating that an offset of S1 is too small when condition A is not met at trigger time 2_{up} and condition A is met at trigger time 2_{down}, wherein trigger times 2_{up} and 2_{down} are consecutive,

producing an output signal indicating that an amplitude of S2 is greater than the reference amplitude when condition B is met at two consecutive trigger times 1_{up} and 1_{down},

producing an output signal indicating that an amplitude of S2 is less than the reference amplitude when condition B is not met at two trigger consecutive times 1_{up} and 1_{down},

producing an output signal indicating that an offset of S2 is too great when condition B is met at trigger time 1_{up} and condition B is not met at trigger time 1_{down}, wherein trigger times 1_{up} and 1_{down} are consecutive, and

producing an output signal indicating that an offset of S2 is too small when condition B is not met at trigger time 2_{up} and condition B is met at trigger time 1_{down}, wherein trigger times 1_{up} and 1_{down} are consecutive.

5,192,918

INTERFERENCE CANCELLER USING TAP-WEIGHT ADAPTIVE FILTER

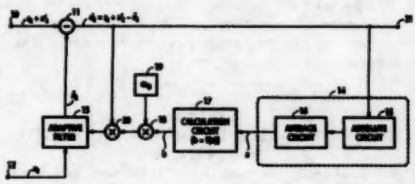
Akihiko Sugiyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 1, 1991, Ser. No. 786,519

Claims priority, application Japan, Nov. 1, 1990, 2-298249

Int. Cl.[5] H03B *1/00*; H03K *5/00*; H04B *1/10*

U.S. Cl. 328—165 **8 Claims**



1. An interference canceller comprising:

a first input terminal to which a combined signal and noise is supplied, and a second input terminal to which a reference signal correlated with said noise is supplied;

a subtractor having a first input port coupled to said first input terminal, a second input port, and an output port;

an adaptive filter having controllable tap weights, the filter having an input port connected to said second input terminal and an output port connected to the second input port of the subtractor;

detector means coupled to the output port of said subtractor for generating an output signal representative of the magnitude of an output signal from said subtractor;

modifier means coupled to said detector means for generating an output signal inversely variable as a function of the output signal of the detector means;

multiplier means for scaling a stepsize in accordance with said inversely variable signal and multiplying the output signal of said subtractor with the scaled stepsize, and controlling the tap-weights of said adaptive filter according to said multiplied signal; and

an output terminal coupled to the output port of said subtractor.

5,192,919

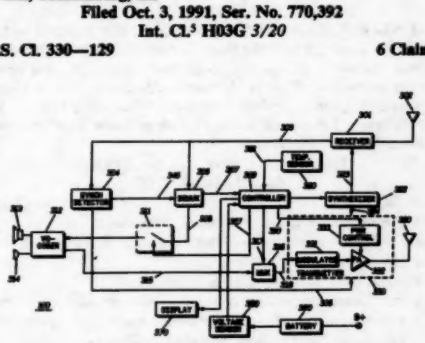
TRANSMITTER HAVING A TEMPERATURE ADJUSTED POWER AMPLIFIER

Alfred B. Wieczorek, Plantation, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 3, 1991, Ser. No. 770,392

Int. Cl.[5] H03G *3/20*

U.S. Cl. 330—129 **6 Claims**



1. A linear power amplifier system for a transmitter, comprising:

a linear power amplifier for amplifying a transmission signal having a power control means for controlling output

power and current drain of the power amplifier; wherein amplification of said transmission signal causes the power amplifier to have a non-constant current drain;

a temperature sensor for generating a temperature signal corresponding to the ambient temperature;

a controller responsive to the temperature signal for reducing the output power when the ambient temperature drops below a predetermined level; a battery for providing the supply current for the power amplifier; and

a voltage sensor coupled to the battery for sensing battery voltage, wherein the controller is responsive to the voltage sensor for adjusting the output so as to maintain the battery voltage above a predetermined threshold at cold temperatures.

5,192,920

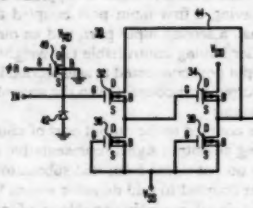
HIGH-SENSITIVITY, LOW-NOISE TRANSISTOR AMPLIFIER

Edward T. Nelson, Pittsford; Eric G. Stevens, and David M. Boisvert, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 18, 1992, Ser. No. 854,046

Int. Cl.[5] H03F *1/08*; H03K *23/46*

U.S. Cl. 330—277 **17 Claims**



6. An amplifier comprising:

an input, an output, and first and second field effect transistors of the same conductivity type each having a gate, a drain, and a source and being formed on a common semiconductor substrate, the second transistor being a depletion mode transistor;

means coupling the input to the gate of the first transistor;

means coupling the source of the first transistor to the gate of the second transistor;

means coupling the source of the second transistor to the output; and

a direct-coupled feedback path from the source of the second transistor to the drain of the first transistor.

5,192,921

MINIATURIZED ATOMIC FREQUENCY STANDARD

Peter J. Chantry, Churchill Boro; Robert W. Weinert, Monroeville; Salvador H. Talisa, Edgewood; Bruce R. McAvoy, Pittsburgh, and Thomas J. Smith, Jr., Salem Twp., Westmoreland County; Irving Liberman, Pittsburgh; Harvey C. Nathanson, Pittsburgh; all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 31, 1991, Ser. No. 815,677

Int. Cl.[5] H03L *7/00*

U.S. Cl. 331—3 **30 Claims**

1. An atomic frequency standard comprising:

an oscillator operable to generate a microwave signal;

a gas cell;

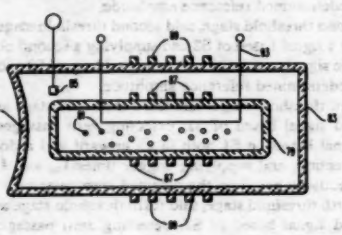
a vapor contained in said gas cell;

a conductor connected to said oscillator, said conductor being located sufficiently near said gas cell to operatively couple said microwave signal to said vapor;

a laser diode operable to generate light and positioned such that said light passes through said vapor;

means for detecting said light having passed through said vapor;

means for controlling the frequency of said microwave signal in response to the amount of light detected by said detecting means;



wherein the circumference of said gas cell is no more than one-half the wavelength of said signal.

5,192,922

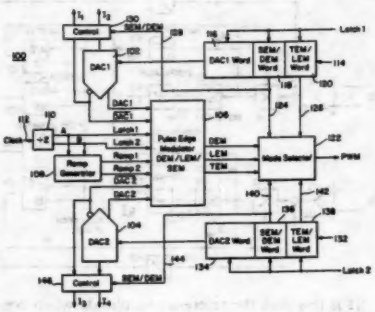
ANTI-FALSE TRIGGERING SYSTEM FOR A PULSE WIDTH MODULATION SYSTEM

Edward P. Jordan, Greensboro, N.C., assignor to Analog Devices, Inc., Norwood, Mass.

Filed May 29, 1992, Ser. No. 890,951

Int. Cl.[5] H03K *7/00*

U.S. Cl. 332—109 **13 Claims**



1. An anti-false triggering system for a pulse width modulation system, comprising:

ramp generator means for generating a ramp signal having a ramp portion and a rest portion;

latch enable signal generating means for providing a latch enable signal only during the ramp portion of said ramp signal; and

pulse edge modulation means, responsive to said ramp portion of said ramp signal, for providing a pulse with at least one of its edges modulated, said pulse edge modulation means being enabled by said latch enable signal only during the ramp portion of said ramp signal for suppressing false triggering of said pulse edge modulation means during said rest portion of said ramp signal.

5,192,923

ROTARY COUPLER

Yasutoshi Komatsu, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 12, 1991, Ser. No. 714,015

Claims priority, application Japan, Jun. 13, 1990, 2-152584

Int. Cl.[5] H01P *1/06*; G11B *21/00*

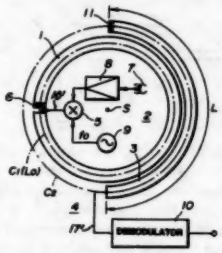
U.S. Cl. 333—116 **6 Claims**

1. A rotary coupler, comprising:

an input circuit for inputting radio frequency signals;

an output circuit for picking up the radio frequency signals inputted by said input circuit;

a rotary portion including a first microstrip formed along substantially one lap of a first circumference of a circle having a circumferential length equivalent to a multiple of an odd number of substantially $\frac{1}{2}$ of the electrical wave length of the radio frequency signal inputted by said input circuit, comprising a first microstrip line having one end connected with said input circuit and the other end terminated by a non-reflecting resistor and an electrically conductive layer which is disposed in parallel with said first microstrip via a layer made of a dielectric material, said rotary portion being rotatable around the center of said first circumference of the circle; and



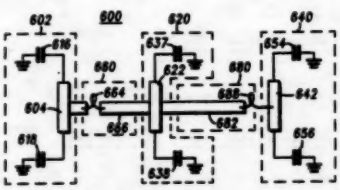
a stationary portion including a second microstrip which is formed along a length equivalent to a multiple of an odd number of substantially $\frac{1}{2}$ of the electrical wave length of the radio frequency signal imputted by said input circuit and is disposed along a second circumference around said center of rotation in such a position that it faces and is close to said first microstrip to be electromagnetically coupled with said first microstrip and an electrically conductive layer provided in parallel with said second microstrip via a layer made of a dielectric material, said second microstrip comprising a second microstrip line having one end connected with said output circuit and the other end terminated by a non-reflecting resistor.

5,192,924

FILTER CIRCUIT FOR ATTENUATING HIGH FREQUENCY SIGNALS

Darioush Agahi-Kesheh, Buffalo Grove, and Duane C. Rabe, Rolling Meadows, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 31, 1991, Ser. No. 786,225
Int. Cl.[5] H03H 7/00; H01P 1/20
U.S. Cl. 333—175 **13 Claims**



1. A circuit board-mounted filter circuit for attenuating selected frequency component portions of a signal applied thereto, said filter comprising:

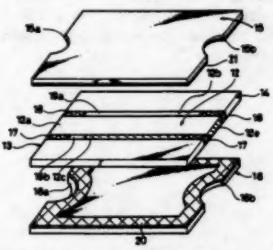
an L-C circuit having at least one inductor and at least one capacitor, wherein said at least one inductor is formed of first and second portions, respectively, with the first portion of the at least one inductor being comprised of a discrete inductive component disposed upon the circuit board and with the second portion of the at least one inductor being comprised of a distributed inductive component formed of a stripline portion disposed within the circuit board and a microstrip portion disposed upon a surface of the circuit board; and wherein said at least one capacitor is formed of first and second portions, respectively, with the first portion of the at least one capacitor being comprised of a discrete capacitive component disposed upon the circuit board and with the second portion of the at least one capacitor being comprised of a distributed capacitive component formed of a stripline portion disposed within the circuit board and a microstrip portion disposed upon a surface of the circuit board.

5,192,925

PIEZOELECTRIC RESONATOR AND METHOD OF FABRICATING THE SAME

Hiroaki Kaida, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed May 2, 1991, Ser. No. 694,815
Int. Cl.[5] H03H 9/00
U.S. Cl. 333—187 **22 Claims**



1. A piezoelectric resonator, comprising:

a piezoelectric resonance element, of an energy-trapped type, utilizing a thickness shear vibration mode, the piezoelectric resonance element having a piezoelectric substrate and a pair of electrodes formed on a pair of side surfaces of the piezoelectric substrate, the side surfaces being opposed to each other and the electrodes overlapping at and being separated by a center portion of the piezoelectric substrate, the center portion thereby forming a vibrating portion in a region where said electrodes are opposed to each other when an electric field is applied to the electrodes;

spacers respectively fastened to said opposed side surfaces of the piezoelectric substrate with gaps being provided between the spacers and at least said vibrating portion so as not to prevent the vibration of said vibrating portion; and

cover sheets respectively affixed to both major surfaces of said piezoelectric resonance element and said spacers so as to provide gaps on top and beneath the vibrating portion for the vibration of said vibrating portion.

5,192,926

DIELECTRIC FILTER WITH ATTENUATION POLES

Hiroyuki Sogo, Otawara; Yasuyuki Kondo, Nasu, and Kazuhisa Yamazaki, Hamamatsu, all of Japan, assignors to Fujitsu Limited, Kawasaki and Fuji Electrochemical Co., Ltd., Tokyo, both of Japan

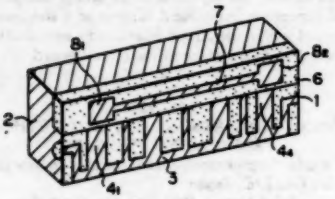
Filed Jan. 17, 1991, Ser. No. 642,351
Claims priority, application Japan, Jan. 17, 1990, 2-006378
Int. Cl.[5] H01P 1/203
U.S. Cl. 333—204 **19 Claims**

1. A dielectric filter having attenuation poles and having a plurality of resonance elements, comprising:

first dielectric means having surfaces and having a shape which is partially cut out to provide a cut out space;

a conductor coating partially covering the surfaces of said first dielectric means;

a first conductor pattern on a portion of said first dielectric means which is not covered by said conductor coating, said first conductor pattern having a plurality of projecting portions which provide all of said plurality of resonance elements, said first conductor pattern cooperating



with said first dielectric means and said conductor coating to form a dielectric resonator having a plurality of stages;

second dielectric means which fills the cut out space of said first dielectric means; and

a second conductor pattern formed on said second dielectric means and coupled with at least two of said plurality of resonance elements.

5,192,927

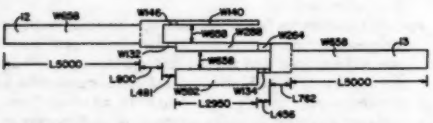
MICROSTRIP SPUR-LINE BROAD-BAND BAND-STOP FILTER

Jau-Hsei Lin, Taichung, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jul. 3, 1991, Ser. No. 725,494

Int. Cl.[5] H01P *1/203*

U.S. Cl. 333—204 **12 Claims**



1. A microstrip spur-line band-stop filter having microstrip coupled lines tuned to the band-stop frequencies of said band-stop filter comprising:

three portions of microstrip transmission lines which comprise:

an input connection for receiving a signal to be filtered,

an output connection for outputting said signal,

multiple sections coupled between said input connection and said output connection along a longitudinal direction and having non-uniform, asymmetric said microstrip coupled lines for filtering said signal,

each of said non-uniform, asymmetric microstrip coupled lines having different widths in a direction transverse to the longitunal direction; said non-uniform, asymmetric microstrip coupled lines being arranged to be asymmetric about said transverse direction for obtaining said band-stop frequencies.

5,192,928

CIRCUIT ELEMENT HAVING FERRIMAGNETIC FILM WITH DEVIATED END SURFACES FOR SUPPRESSING SPURIOUS MAGNETOSTATIC WAVE RESONANCE MODES

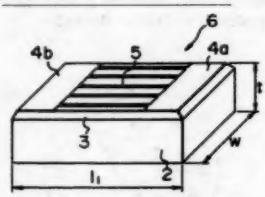
Yasuhide Murakami, Kumagaya, and Kohei Ito, Fukaya, both of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Sep. 4, 1991, Ser. No. 754,565

Claims priority, application Japan, Sep. 5, 1990, 2-234974

Int. Cl.[5] H01P *1/215*

U.S. Cl. 333—219.2 **10 Claims**



1. A circuit element utilizing a volume magnetostatic wave, the element being responsive to an externally applied magnetic field having a direction, the element comprising:

means for exciting the magnetostatic wave;

a medium for propagating the magnetostatic wave in a first plane defined thereby, said medium having end faces, and wherein said first plane is perpendicular to the direction of the applied magnetic field; and

means for selectively suppressing spurious modes while allowing operation in a main resonance mode over a wide frequency range, said suppressing means including at least a part of said end faces of the medium being deviated from a second plane perpendicular to said first plane in which the magnetostatic wave is propagated.

5,192,929

METHOD OF DETECTING A DEFLATED TIRE ON A VEHICLE

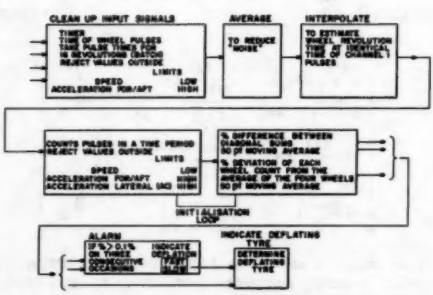
John C. Walker, Coldfield, and Lavinder S. Rehal, Walsgrave-on-Sowe, both of Great Britain, assignors to Sumitomo Rubber Industries Limited, Japan

Filed Jan. 28, 1991, Ser. No. 646,678

Claims priority, application United Kingdom, Feb. 9, 1990, 9002925

Int. Cl.[5] B60C *23/00*

U.S. Cl. 340—444 **19 Claims**



1. A method of detecting a partially deflated pneumatic tire on a vehicle having first, second, third and fourth tires, each of the tires being mounted on a first, second, third and fourth wheel, respectively, comprising sensing the angular velocity of each of the wheels by providing for each of the wheels, a pulse generator means for providing a single pulse for each turn of

each of the wheels, selecting the first wheel and measuring the time for one rotation of the first wheel, after beginning the measuring for the first wheel similarly measuring the times of one rotation for each of the second, third and fourth wheels, storing the times, for rotation of each of the wheels for at least three rotations of each of the wheels and averaging the times to produce an average angular velocity value signal for each of the wheels, storing in a processor unit at least 3 successive average angular velocity value signals for each of the wheels and calculating by interpolating therein the angular velocity for each of the wheels at a predetermined time, so that the angular velocities of all of the wheels are known for the same time, processing the four signals in the processor unit which subtracts the sum of the signals from one pair of diagonally opposite wheels from the sum of the signals from the other pair of diagonally opposite wheels, and senses when the magnitude of the resulting value is in a range between 0.05% and 0.60% of the mean of the two sums, and, when the resulting value is in the range, operating a warning device to indicate at least one of the tires is partially or completely deflated.

5,192,930

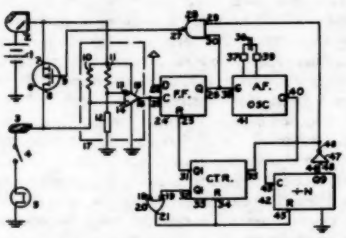
F.E.T. FLASHER

Douglas C. Brueggemann, 745 Flamingo Dr., W. Palm Beach, Fla. 33401, and Norman R. Dittmar, 525 5th Ave. N.W., Rochester, Minn. 55901-2840

Continuation-in-part of Ser. No. 656,487, Feb. 15, 1992, abandoned. This application Dec. 26, 1991, Ser. No. 813,680

Int. Cl.[5] B60Q *1/40*

U.S. Cl. 340—477 **5 Claims**



1. An electronic flasher-switch device, in a motorized vehicle having a turn signal switch with Left detent, Off, and Right detent positions and having left and right turn signal lamps, a direct current (d.c.) power source and a system ground, said device comprising:

a. an accessory terminal, a flasher terminal, and a connection to said ground,

b. a field effect transistor (F.E.T.) having a source, a gate, and a drain, wherein said source is connected to said accessory terminal, and said drain is connected to said flasher terminal,

c. a turn signal switch detector having an input port and an output port, whereby a logic 1 is produced at said output port whenever said turn signal switch is in said Left detent position or said Right detent position,

d. a flip-flop having a clocking port, a data port, and output port, and a reset port, wherein said clocking port is connected to said turn signal switch detector output port, and said data port is held at logic 1,

e. an audio frequency oscillator having a gate and an output port, wherein said audio frequency oscillator gate is connected to said flip-flop output port, whereby said oscillator commences to oscillate whenever said turn signal switch is moved to said Left detent position or said Right detent position,

f. a frequency divider having a clocking port, an output port, and a reset port, wherein said frequency divider clocking port is connected to said oscillator output port, whereby a periodic pulse train of a standard flasher frequency is produced at said frequency divider output port,

g. an inverter having an input gate and an output port, for providing a periodic train of pulses corresponding to MARKS in said turn signal flashing sequence, wherein said inverter input gate is connected to said frequency divider output port,

h. a counter having a clocking port, an output port, a complementary output port, and a reset port, wherein said counter clocking port is connected to said inverter output port, whereby state of said counter is advanced whenever said inverter produces each one of said MARKS,

i. an OR circuit having first and second complementary input ports and an output port, wherein said second input port is connected to said counter complementary output port, and said first input port is connected to said turn signal switch detector output port, whereby, when said counter reaches a predetermined flash count, or when said turn signal switch is in said Off position, said counter and said divider are both reset,

j. a NAND circuit having first and second gates and an output port, wherein said first NAND gate is connected to said inverter output port, and said second NAND gate is connected to said flip-flop output port, and said NAND output port is connected to said field effect transistor gate, so that when said turn signal switch is in said Left detent position or said Right detent position beyond said predetermined count, said signal lamps stop flashing.

5,192,931

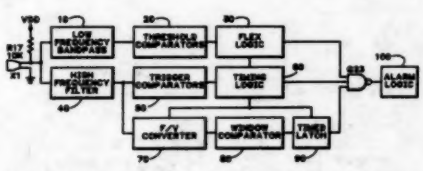
DUAL CHANNEL GLASS BREAK DETECTOR

Richard A. Smith, Portland, and Christopher A. Bernhardt, Tigard, both of Oreg., assignors to Sentrol, Inc., Portland, Oreg.

Filed Feb. 11, 1992, Ser. No. 835,733

Int. Cl.[5] G08B *13/04*

U.S. Cl. 340—550 **10 Claims**



1. A glass break detector for detecting the breaking of a window or the like comprising:

(a) an acoustic transducer;

(b) a flex detection circuit responsive to the acoustic transducer for detecting a low frequency positive acoustic wave characteristic of an inward flex of the window; and

(c) an alarm circuit responsive to the flex detection circuit for generating an alarm.

5,192,932

SENSING MAT, AND METHODS OF CONSTRUCTING AND UTILIZING SAME

Henry J. Schwab, Jr., 429 Rittenhouse Clr., Havertown, Pa. 19083

Continuation-in-part of Ser. No. 430,146, Nov. 1, 1989, Pat. No. 5,086,291. This application May 2, 1991, Ser. No. 694,510

The portion of the term of this patent subsequent to Feb. 4, 2009, has been disclaimed.

Int. Cl.[5] G08B *21/00*

U.S. Cl. 340—604 **17 Claims**

1. A warning device for the prevention of damage to electrical equipment and property by liquids, comprising:

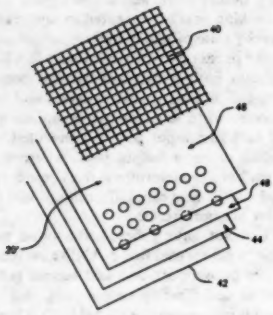
a thin, flexible mat which is adaptable to various situations

by changing the size to meet the required conditions on site including conductive and non-conductive portions;

a sensitivity layer for adjusting the sensitivity of said mat;

a monitoring means for sensing changes in the electrical properties of said mat;

means to electrically connect said mat to said monitoring means;



upon sensing a change in the electrical properties of said mat, a warning device is activated by said monitoring means;

said monitoring means deactivates said electrical equipment; and

said mat may be cut to change the size and shape.

5,192,933

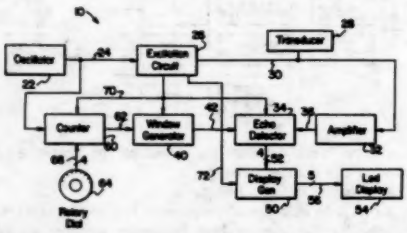
FIELD-ADJUSTABLE ULTRASONIC DETECTOR

Al W. Rodriguez, 33 Valencia St., Hauppauge, N.Y. 11788

Filed Jun. 14, 1990, Ser. No. 538,385

Int. Cl.[5] G08B *21/00*

U.S. Cl. 340—621 **15 Claims**



1. A method of determining the presence or absence of an ultrasonically conductive medium within a container comprising the steps of:

(a) providing information relating to the size of a container;

(b) adjusting the position of an electronic window of a predetermined duration based upon the information provided in said step (a), the electronic window being associated with the travel time of a burst of energy through the container;

(c) transmitting a burst of energy towards an opposing wall of the container; and

(d) detecting whether said ultrasonically conductive medium is present in the container by responding to the receipt of an echo from said burst of energy only during the time duration determined by the electronic window,

wherein said information comprises a respective container size for each of a plurality of discrete settings of a switch that controls the position of the electronic window.

5,192,934

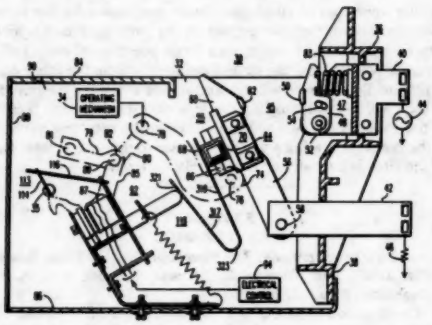
CIRCUIT BREAKER HAVING A TRIP ACTUATOR

Stanislaw A. Milianowicz, Monroeville; Nagar J. Patel, Plum Boro; William O. Aglietti, Penn Hills Township, Allegheny County, all of Pa., and Brian F. McDonnell, Charlotte, N.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 6, 1991, Ser. No. 788,697

Int. Cl.[5] H01H *9/00*

U.S. Cl. 335—172 **16 Claims**



1. A circuit breaker having electrical contacts operable between open and closed positions, including a movable contact assembly which is pivoted to an open position when the electrical contacts are operated to the open position, and a trip actuator which provides a mechanical movement upon receiving an electrical trip pulse, with the mechanical movement actuating a trip mechanism of the circuit breaker to cause the electrical contacts to assume the open position, with the trip actuator being characterized by:

first and second parallel magnetic circuits,

said first magnetic circuit having a lower reluctance than said second magnetic circuit,

magnet means disposed to provide magnetic flux for both said first and second magnetic circuits, with the flux from said magnet means favoring the lower reluctance of the first magnetic circuit,

a pivotally mounted clapper member having a first position in which it is releasably held in said first magnetic circuit by a magnetic force, and a second position which opens said first magnetic circuit,

bias means providing a biasing force which biases said clapper member toward said second position, with the bias means being selected to provide a biasing force which is less than said magnetic force holding the clapper member in said first position,

electromagnetic means for receiving the electrical trip pulse, with the trip pulse causing said electromagnetic means to provide a magnetic flux which momentarily opposes the magnetic flux in said first magnetic circuit, switching the magnetic flux provided by the magnet means to the second magnetic circuit and reducing the magnetic force holding the clapper member in said first position below the magnitude of the biasing force, whereby said bias means pivots the clapper member to said second position,

linking means disposed between the clapper member and the trip mechanism of the circuit breaker, with the pivoting of the clapper member to said second position actuating the trip mechanism,

and including reset means fixed to the pivotable movable contact assembly which contacts and resets the pivotable clapper member to the first position thereof in response to the pivotable movement of the movable contact assembly to the open position.

5,192,935

ATTACHMENT STRUCTURE OF A MAGNETIC PIECE OF A DEFLECTION YOKE

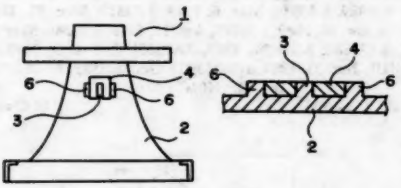
Sang-Hyeog Yun, Suwon, Rep. of Korea, assignor to Samsung Electron Devices Co. Ltd., Rep. of Korea

Filed Nov. 19, 1991, Ser. No. 794,580

Claims priority, application Rep. of Korea, Nov. 22, 1990, 90-18005

Int. Cl.[5] H01F 3/12, 7/00

U.S. Cl. 335—211 2 Claims



1. An attachment structure for a magnetic piece of a deflection yoke to be firmly fixed to a central part of a coil separator, said attachment structure comprising:

a center protuberance formed at the center of a supporting base of said coil separator, said center protuberance contacting said magnetic piece; and

supporting means integrally formed with said center protuberance for supporting the right and left side surfaces of said magnetic piece, said supporting means comprising two members respectively at the right and left of said center protuberance and protruding with the same height as said center protuberance.

5,192,936

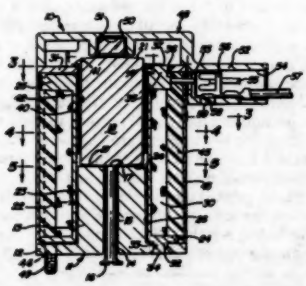
SOLENOID

James A. Neff, Birmingham; Richard A. Fagerlie, West Bloomfield; Eric P. Janssen, Howell, and Michael E. Robert, Union Lake, all of Mich., assignors to Mac Valves, Inc., Wixom, Mich.

Filed Aug. 22, 1991, Ser. No. 748,457

Int. Cl.[5] H01F 3/00, 7/08

U.S. Cl. 335—281 7 Claims



1. A solenoid (10) having a bobbin (22) and a coil (30) wound thereon, the bobbin (22) having a core hole (26) with an armature bushing (40) mounted therein, an armature (18) and pole piece (13) operatively mounted in the core hole (26), characterized in that:

(a) the bobbin (22) has a tubular body which forms a core hole (26) that is rectangular in cross section and has an upper end and a lower end;

(b) the armature bushing (40) is mounted in the upper end of the bobbin core hole (26) and it is rectangular in cross section;

(c) the armature (18) is movably mounted in the armature bushing (40) and it is in cross section;

(d) the pole piece (13) is fixedly mounted in the lower end of the bobbin core hole (26) and it is rectangular in cross section;

(e) the bobbin (22) is provided with an integral upper flange (25) and an integral lower flange (24) which enclose the upper and lower ends of the coil (30);

(f) a top flux plate (31) is mounted on the upper bobbin flange (25) and it has an axial hole formed therethrough which is rectangular in cross section and through which the armature bushing (40) is mounted;

(g) a bottom flux plate (12) is integral with the pole piece (13) and extends beneath the bobbin lower flange (24);

(h) a tubular can (43) having top and bottom open ends and a rectangular cross section is mounted around the coil (30), and it is held in contact, with and between, the top (31) and bottom (12) flux plates;

(i) fastening means (32,35) for securing the top (31) and bottom (12) flux plates to the bobbin flanges to hold the bobbin (22), flux plates (31,12) and tubular can (43) together; and,

(j) a sealing, electrically insulating and heat conducting encapsulant material is disposed within the tubular can (43) and surrounds the coil (30); and,

(k) the solenoid (10) includes a detachably mounted top end cover (48).

5,192,937

RESISTANCE UNIT FOR MOTOR SPEED CONTROL

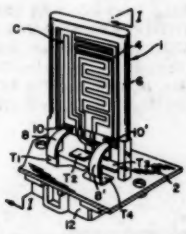
Woo Y. Lee, Seoul, Rep. of Korea, assignor to Dong A Electric Parts Co., Ltd., Kuri, Rep. of Korea

Filed Dec. 18, 1991, Ser. No. 809,871

Claims priority, application Rep. of Korea, Dec. 24, 1990, 90-20771

Int. Cl.[5] H01H 61/02

U.S. Cl. 337—104 3 Claims



1. A device for motor speed control comprising:

a board having first and second surfaces suitable for mounting speed control components;

a plurality of speed select terminals mounted on said first surface of said board and extending through to said second surface;

a resistance unit including a plurality of resistors formed by imprinting resistive materials on a substrate, each resistor is connected in series to a corresponding speed select terminal for selectively varying the amount of current through said speed select terminal;

at least one heat sensitive fuse connected between one of said speed select terminals and one of said resistors for disconnecting said resistor from said terminal upon reaching a predetermined temperature;

a heat-proof plate for protecting the outer edges of said substrate, said plate being disposed substantially orthogonal to said board; and

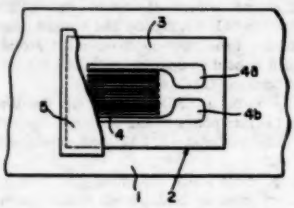
a housing mounted on said second surface of said board for protecting said extended portions of said speed select terminals.

5,192,938

STRAIN GAGE, TRANSDUCER EMPLOYING THE STRAIN GAGE, AND METHOD FOR PRODUCING THE STRAIN GAGE

Werner Ort, Darmstadt, Fed. Rep. of Germany, assignor to Hottinger Baldwin Messtechnik GmbH, Darmstadt, Fed. Rep. of Germany

Filed Apr. 5, 1991, Ser. No. 681,579
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1990, 4011314
Int. Cl.[5] G01L 1/22
U.S. Cl. 338—5 8 Claims



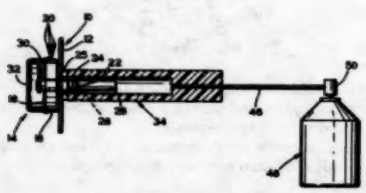
1. A strain gage, comprising a backing and at least one strain responsive measuring resistor grid secured to said backing, and wherein said backing is formed of polyphenylenesulfide, whereby said strain gage is substantially free of spurious error signals caused by changes in the relative humidity to which said strain gage is exposed in operation.

5,192,939

CLEANING DEVICE FOR ROTARY CONTROLS E.G. POTENTIOMETERS AND SWITCHES

Alan L. Kessow, 505 Thackeray, Maumee, Ohio 43537, and Alec W. Palmer, 6238 State Hwy. 109, Delta, Ohio 43515

Filed Mar. 16, 1992, Ser. No. 852,010
Int. Cl.[5] H01C 10/10, 13/00; H01H 1/60
U.S. Cl. 338—75 5 Claims



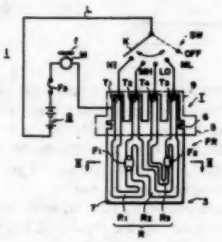
1. In combination, an electronic unit having a panel, at least one potentiometer having an externally-threaded cylinder extending outwardly through said panel and having a concentric rotatable shaft extending therethrough, a cleaning device for contacts of said potentiometer comprising a housing of plastic material having an opening at one end and closed at the other end, said one end having internal threads for connecting with the external threads of said cylinder, a small tube connected with the closed end of said housing and communicating with a chamber formed within said housing, and a pressurized container of contact cleaning fluid communicating with said small tube to supply cleaning fluid to said chamber and to an annular space between said shaft and said threaded cylinder to clean contact areas of said potentiometer.

5,192,940

FLAT RESISTANCE FOR BLOWER CONTROL UNIT FOR AUTOMOBILE AIR CONDITIONER AND BLOWER CONTROL UNIT USING THE SAME

Kiyoshi Yajima; Takao Suzuki, both of Funabashi; Masanori Itoh, Tokyo; Hitoshi Okuyama, Funabashi; Ken-ichi Uruga, Kokubunji, and Hisanaga Hirabayashi, Tokyo, all of Japan, assignors to Fujikura, Ltd.; Calsonic Corp. and Kohwa Mfg. Co., all of Tokyo, Japan

Division of Ser. No. 417,571, Oct. 5, 1989, Pat. No. 5,000,662. This application Dec. 31, 1990, Ser. No. 636,901
Claims priority, application Japan, Mar. 6, 1989, 1-53515; Mar. 6, 1989, 1-53516; Mar. 6, 1989, 1-53517; Mar. 17, 1989, 1-63512; Apr. 18, 1989, 1-96385; Apr. 18, 1989, 1-96386; May 19, 1989, 1-124386; May 24, 1989, 1-60035[U]; Jun. 7, 1989, 1-65781[U]; Jun. 23, 1989, 1-74263[U]; Oct. 7, 1989, 63-252110
Int. Cl.[5] H01C 1/012
U.S. Cl. 338—308 19 Claims



1. A flat resistance comprising:

a porcelain enameled metallic substrate including a flat head portion, having an edge, and parallel terminal supporting the head portion and the terminal supporting portions forming one surface;

a resistance circuit printed on the one surface of the head portion, the resistance circuit including a plurality of electrically interconnected resistances, at least one of the resistances having a first portion and a second portion, said first portion and said second portion each having a fuse connecting end, said fuse connecting end defining a gap between the first portion and the second portion, at lest one of the fuse connecting ends comprising fuse attracting means;

a temperature fuse interposed in the resistance circuit and adapted to melt to break the resistance circuit when the porcelain enameled metallic substrate substantially reaches a permissible maximum temperature at a portion thereof, the temperature fuse being provided in the vicinity of the portion of the substrate, the temperature fuse being electrically coupled to the fuse connecting ends of the first portion and the second portion, the fuse attracting means attracting the temperature fuse when the temperature fuse is in a molten state when the substrate reaches the permissible maximum temperature; and

terminal means, printed on the one surface of both the head portion and the terminal supporting portions, the terminal means including terminals each connected to one end of a corresponding one of the resistances.

5,192,941

OVERCURRENT TRIP SWITCH

Anthony J. Fishovitz, New Sewickley Twp., Beaver Cty.; Allan V. Heberling, Daugherty Twp., Beaver Cty.; Thomas K. Fogle, Shaler, and Michael W. Chlystek, McMurray, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

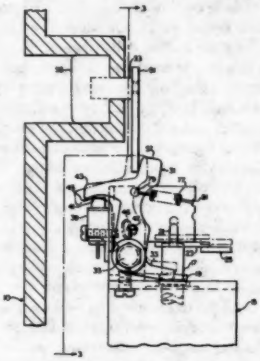
Filed May 29, 1991, Ser. No. 706,922
Int. Cl.[5] G08B 21/00
U.S. Cl. 340—638 8 Claims

1. An alarm assembly for use with a circuit breaker contained within a circuit breaker housing comprising:

a trip mechanism for interrupting current through said circuit breaker when a predetermined current condition is reached;

a flux shunt trip device operatively associated with said trip mechanism, said flux shunt trip device having plunger means movable between an extended position and a retracted position, said plunger means moving to said extended position upon said predetermined condition and directly activating said trip mechanism to interrupt current through said circuit breaker;

an actuating member operatively associated with said plunger means and movable between an initial position



and an actuated position, said actuating member engageable directly by said plunger means so that motion of said plunger means to said extended position upon said predetermined condition also causes said actuating member to move from said initial position to said actuated position and said actuating member remains in said actuated position even if said plunger means returns to said retracted position; and

an electrical switch mechanism activated by said actuating member when said actuating member moves to said actuated position to generate an alarm signal indicating tripping of the circuit breaker by the flux shunt trip device.

5,192,942

IMAGING APPARATUS FOR DISPLAYING RELATED IMAGING PROCESSING FUNCTIONS

Yoshikado Yamada, Kashihara; Kimihito Yamasaki, Nara; Syoichiro Yoshiura, Yamatokoriyama; Kazuyuki Ogita, Nara, and Osamu Iwasa, Kadoma, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 17, 1991, Ser. No. 716,690

Claims priority, application Japan, Dec. 21, 1987, 62-324802; Dec. 21, 1987, 62-324804; Dec. 21, 1987, 62-324805

Int. Cl.[5] G09G *5/00*

U.S. Cl. 340—706 **5 Claims**

1. An imaging apparatus comprising:

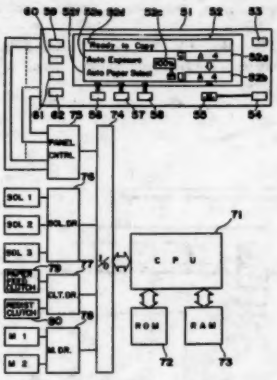
a plurality of image processing functions which are classified at least into a first group including a plurality of first related functions and a second group including a plurality of second related functions;

group selection means for selecting one of said groups of related functions;

display means for displaying a portion of related functions for said one selected group which is selected by said group selection means;

function selecting means for selecting from said portion of related functions for said one selected group displayed in said display means; and

listing means for listing said portion of related functions for said one selected group in said display means for confirming said portion of related functions selected by said group selecting means;



said portion of related functions comprising a display function for displaying the remaining portions of said one selected group of related functions in said display means.

5,192,943

CURSOR DISPLAY CONTROL METHOD AND APPARATUS IN A GRAPHIC DISPLAY SYSTEM

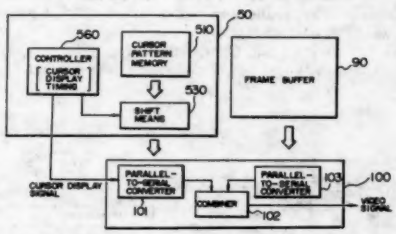
Shigeru Matsuo; Tadashi Fukushima; Tooru Komagawa, and Masahisa Narita, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Engineering Co., Ltd., Ibaraki, both of Japan

Filed Sep. 17, 1990, Ser. No. 583,584

Claims priority, application Japan, Sep. 20, 1989, 1-242256

Int. Cl.[5] G09G *3/02*

U.S. Cl. 340—709 **13 Claims**



1. A cursor display control method for performing display of a cursor together with characters and/or figures on a display screen, said cursor display control method comprising the steps of:

reading parallel cursor pattern data from cursor pattern storage means for storing a cursor pattern on a bit mapping basis;

shifting all of said parallel cursor pattern data in said cursor pattern storage means using a shift register in a continuous operation during a single non-display period of said cursor on a bit-by-bit basis;

converting said shifted parallel cursor pattern data into serial cursor pattern data at a display timing of said cursor; and

performing display of said cursor based on said serial cursor pattern data.

5,192,944

SOLAR-POWERED DISPLAY DEVICE

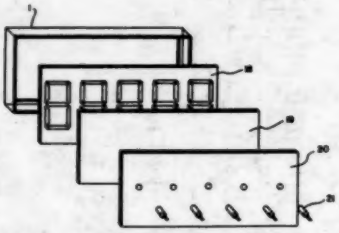
Masatoshi Otsuki; Yasuyoshi Kawanishi; Kenji Sawada; Yoshinori Kaido; Takayuki Mizumura, and Masayoshi Maeba, all of Hyogo, Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Dec. 12, 1990, Ser. No. 626,276

Claims priority, application Japan, Dec. 14, 1989, 1-144821[U]

Int. Cl.[5] G09G 3/18; G09F 9/35

U.S. Cl. 340—765 14 Claims



1. A light powered display device, comprising:

a front panel;

a solar battery on said front panel;

at least one window in said solar battery;

an electrical storage device for storing electrical energy generated by said solar battery;

at least one light emitter powered by said electrical storage device;

means for permitting said light emitter to provide background illumination for at least one character fixed on a surface of said front panel in said at least one window; and

means for permitting changing of said at least one character.

5,192,945

DEVICE AND METHOD FOR DRIVING A LIQUID CRYSTAL PANEL

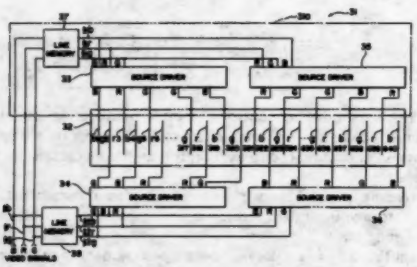
Tokutarou Kusada, Tenri, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 430,422, Nov. 2, 1989, abandoned. This application Dec. 9, 1991, Ser. No. 803,910

Claims priority, application Japan, Nov. 5, 1988, 63-280029; Dec. 23, 1988, 63-326472

Int. Cl.[5] G09G 1/28

U.S. Cl. 340—784 21 Claims



1. A device for driving a color liquid crystal display panel, the display panel including at least a plurality of color pixels arranged in a matrix of rows and columns according to a predetermined color order and a plurality of source lines, each of which is connected to one column of the plurality of color pixels having the same color, the plurality of source lines being divided into at least first and second groups, and each of the first and second groups being further divided into first and second sub-groups, said device comprising:

signal transmitting means for transmitting a signal to each of said plurality of source lines, said signal transmitting means includes first source drive means and second source drive means provided corresponding to said first and second groups of said source lines, respectively, and each of said first and second source drive means including a first driver provided corresponding to said first sub-group and a second driver corresponding to said second sub-group, said first driver and second driver being activated alternately for latching a color signal supplied thereto;

first signal supply means and second signal supply means provided corresponding to said first and second source drive means, respectively, for supplying color signals to the corresponding source drive means,

each of said first and second signal supply means including

input converting means for receiving a plurality of types of analog color signals of a plurality of different colors supplied in parallel and for converting the plurality of types of analog color signals to a serial digital data train, including the plurality of types of color signals arranged in a color order corresponding to the color order defined by the source lines of the corresponding group, and

a plurality of storing means for storing an output of said first converting means according to an address, each said storing means including a first area for storing data to be transmitted to said first sub-group and a second area for storing data to be transmitted to said second sub-group;

writing means for successively writing data into the first and second areas of each of said storing means at sequential addresses;

reading means for successively reading the stored data from a first of said storing means, said reading means including alternate reading means for reading the data alternately from said first area and said second area, said reading means and said one of said plurality of storing means and reading data from another of said plurality of storing means to produce a high speed signal supply means; and

output converting means for converting a serial data train read from said reading means to analog signals and transmitting the analog signals to the corresponding source drive means, said analog converting means including second converting means for converting said thus read serial data train to parallel analog signals for each respective color and outputting the parallel analog signals.

5,192,946

DIGITIZED COLOR VIDEO DISPLAY SYSTEM

E. Earle Thompson, Dallas, and Thomas W. DeMond, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 315,633, Feb. 27, 1989, abandoned. This application May 30, 1991, Ser. No. 711,495

Int. Cl.[5] G09G 3/34

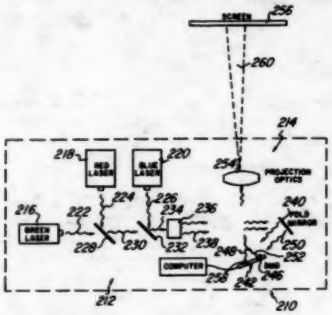
U.S. Cl. 340—794 60 Claims

1. A color visual display system comprising:

(a) a plurality of light beams, with at least some of said beams being centered about different frequencies, time ordered in a sequence during a first time period less than the critical flicker frequency for the human eye with each light beam within said sequence being generally directed along an optical path for a second time period less than said first time period; and

(b) a plurality of individually controllable elements, each located along said optical path to have impinged thereon a predetermined portion of each said light beam, each said element switchable between a first state and a second state in a time period less than or equal to said second time period and allowing substantially all of said predetermined

portion of said light beams to impinge at a predetermined location on a surface during said first state and not allowing said predetermined portion to impinge on said surface during said second state.

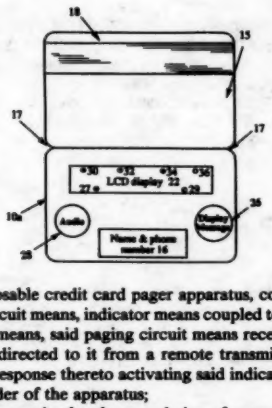


5,192,947

CREDIT CARD PAGER APPARATUS

Simon Neustein, 415 East 64th St.-Apt. 1C, New York, N.Y. 10021

Filed Feb. 2, 1990, Ser. No. 473,885
Int. Cl.[5] H04Q 7/00
U.S. Cl. 340—825.44 **33 Claims**



1. A disposable credit card pager apparatus, comprising:

paging circuit means, indicator means coupled to said paging circuit means, said paging circuit means receiving paging signals directed to it from a remote transmitter location and in response thereto activating said indicator means to the holder of the apparatus;

housing means in the shape and size of a credit card and constructed for utilization in a standard credit card reader;

account identification means containing account identification information and located on said housing means for credit card usage in a standard credit card reader by the holder of the apparatus;

processing means in said housing means associated with the account identification means for processing information received from the paging signals;

a thin flat battery in said housing means, said indicator means, said paging circuit means and said processing means being integrated with as well as energized by said thin flat battery, and

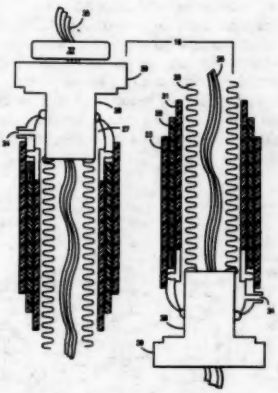
wherein said housing means comprises a hingeable flap portion thinner than the rest of said housing means, said account identification information being on said thinner flap portion to thereby permit the hingeable flap portion to conform to ANSI credit card standards.

5,192,948

GEOPHONE BOREHOLE CABLE

William H. Troyer, Colleyville, and Victor L. Schoepf, Carrollton, both of Tex., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Nov. 4, 1991, Ser. No. 787,469
Int. Cl.[5] G01V 1/00
U.S. Cl. 340—855.1 **34 Claims**



1. A borehole cable, comprising:

a) a plurality of modules,

b) a plurality of cable conduits interconnecting said modules at spaced-apart positions to form said borehole cable, said cable conduits being capable of contraction and expansion due to external pressure and temperature changes during borehole operations, each of said conduits comprising:

i) an inner core of flexible, corrugated tubing which compresses longitudinally under continuous external pressure applied by a subsurface formation surrounding a borehole in which said cable is deployed, and

ii) an outer wall of interlock completely surrounding said inner core, which is flexible under atmospheric pressure on the surface of the earth and compresses longitudinally without change in radial dimension along with the longitudinal compression of said inner core under the continuous external pressure applied by said subsurface formation to lock and form a rigid outer cable wall to prevent any further compression of said inner core during cable deployment in said borehole.

5,192,949

DIGITAL DATA TRANSMISSION SYSTEM HAVING ERROR DETECTING AND CORRECTING FUNCTION

Hideto Suzuki; Yoshikazu Kurose, and Shinji Aoki, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 30, 1990, Ser. No. 575,377
Claims priority, application Japan, Aug. 31, 1989, 1-225855
Int. Cl.[5] H03M 7/14
U.S. Cl. 341—68 **19 Claims**

1. In an information transmission system for coding n-bit information data in the form of an NRZL code into m-bit coded data such that each of said information data corresponds to only one of said coded data which are all different from one another, n being greater than 2 and m being greater than n, NRZI converting said m-bit coded data such that m-bit coded data having a codeword digital sum (CDS) which does not have the same polarity as a digital sum variation (DSV) of previously NRZI converted m-bit coded data is selected as a next NRZI conversion input to limit the DSV of the NRZI

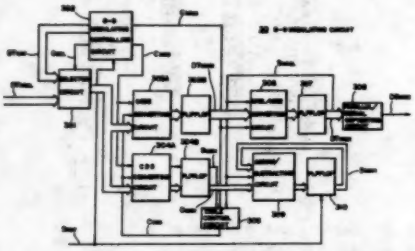
converted signal, and transmitting the thus NRZI converted coded data, the combination of:

first controlling means for generating a control signal to control NRZI conversion of said m-bit coded data and for generating a mode signal;

code generating means for generating identification data having a predetermined data pattern corresponding to said n-bit information data and for outputting said identification data and said m-bit coded data obtained by coding of said n-bit information data in response to said mode signal and a coding control signal;

CDS generating means for generating a CDS corresponding to said identification data and m-bit coded data output by said code generating means in response to said mode signal and the coding control signal;

NRZI converting means responsive to said control signal from said first controlling means for outputting the identification data obtained from said code generating means as



they are without NRZI converting the same and for executing NRZI conversion of said m-bit coded data outputted from said code generating means using an initial value determined by a conversion initial value signal;

latching means for latching the last bit of the identification data outputted from said NRZI converting means and providing the latched bit as said conversion initial value signal;

DSV detecting means for detecting a current DSV corresponding to an output signal of said NRZI converting means in response to said conversion initial value signal and a DSV immediately preceding said current DSV; and

second controlling means for generating said coding control signal in response to said control signal from said first controlling means, said identification data and m-bit coded data output from said CDS generating means, said conversion initial value signal and the detected current DSV from said DSV detecting means to limit the DSV of the output signal of said NRZI converting means.

5,192,950

PARTIAL WORD TO FULL WORD PARALLEL DATA SHIFTER

William H. Stephenson, Jr., Raleigh, N.C., assignor to Alcatel Network Systems, Inc., Richardson, Tex.

Filed Dec. 16, 1991, Ser. No. 808,533

Int. Cl.[5] H03M *7/00*

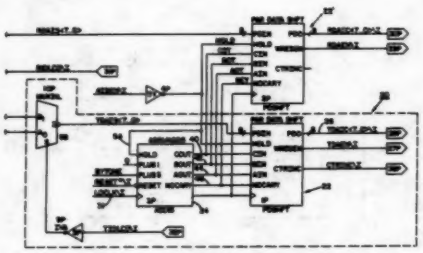
U.S. Cl. 341—100 **10 Claims**

1. A partial word to full word parallel data shifter so as to convert incoming parallel data containing zero to N data bits into output data of N data bits, comprising:

A) means, under control of a selection signal, for selectively receiving bits from the incoming parallel data and selectively receiving remainder bits of data and for outputting the selectively received data in 2N−1 parallel bits;

B) means for receiving the 2N−1 bits from the selective receiving means for outputting N parallel data bits and for outputting up to N−1 remainder bits to the selective receiving means, said means for receiving 2N−1 bits including means for causing the output bits to be recirculated as remainder bits if a NOCARRY signal is enabled; and

C) means for adding the number of remainder bits to the number of data bits of the current incoming parallel data



so as to generate an enabled NOCARRY signal if said addition is less than N, and for generating a selection signal based upon said addition for controlling the received bits of the selective receiving means.

5,192,951

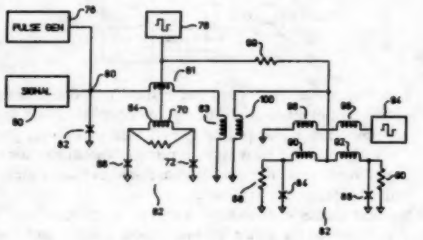
ANALOG-TO-DIGITAL CONVERTER CIRCUITS AND METHODS USING SUPERCONDUCTIVE ELEMENTS

Herbert L. Ko, Mountain View, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 22, 1991, Ser. No. 796,276

Int. Cl.[5] H03M *1/34*

U.S. Cl. 341—133 **14 Claims**



1. An apparatus for converting an analog input signal to a digital signal comprising:

input means for inputting an analog signal;

comparator means for comparing the analog signal with at least one predetermined threshold, said comparator means including first means for quantizing flux;

output means for outputting a digital signal proportional to a value of said analog value in response to said comparison;

feedback means for compensating variations in the comparator means; and

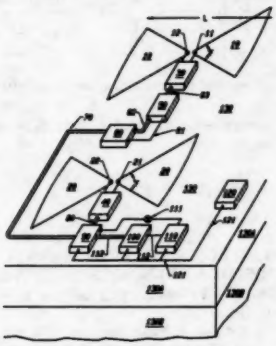
feedback enabling means for selectively enabling said feedback means to establish an equilibrium state within said comparator means.

5,192,952

METHOD AND APPARATUS FOR TRANSMITTING ELECTROMAGNETIC SIGNALS INTO THE EARTH FROM A CAPACITOR

J. Ralph Johler, 16796 W. 74th Pl., Golden, Colo. 80403-7916

Filed Jun. 11, 1991, Ser. No. 713,955
Int. Cl.[5] G01S *13/04*; G01V *3/12, 3/38*
U.S. Cl. 342—22 21 Claims



1. A method for transmitting an electromagnetic signal through an earth formation, including the steps of:

(a) disposing capacitor plates having a largest dimension L, in direct contact with the earth formation to form an earth capacitor comprising the plates and a region of the earth formation near the plates;

(b) applying a short voltage pulse across the capacitor plates to transmit electromagnetic radiation into the earth formation, wherein for each frequency component of the electromagnetic radiation, the largest dimension L satisifies the relation $Re[kL] < 1$, where k is the wavenumber in the earth formation of said frequency component, wherein the short voltage pulse has frequency components in a broad band extending from below 1 MHz to above 100 MHz;

(c) detecting electromagnetic radiation that has propagated through the earth formation in response to application of the short voltage pulse; and

(d) processing only frequency components of the detected electromagnetic radiation, in a frequency window having an upper frequency less than 25 MHz, which have propagated into the earth formation to a penetration depth much greater than on the order of several hundred feet to image the earth formation.

5,192,953

PAVEMENT STRUCTURE EXAMINATION VEHICLE

Hiroshi Tomita, Tokyo, Japan, assignor to Geo Search Co., Ltd., Tokyo, Japan

Filed Nov. 4, 1991, Ser. No. 787,012
Claims priority, application Japan, Nov. 6, 1990, 2-300299
Int. Cl.[5] G01V *3/12*; E21B *7/02*
U.S. Cl. 342—22 4 Claims

1. A pavement structure examination vehicle comprising:

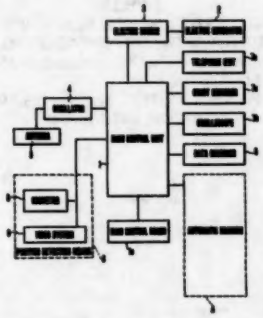
a vehicle body of a rear gate type having a rear door which rotates vertically to open and close;

underground radar means attached to said body vertically movable relative to the direction of traveling for providing observation data;

a stand for a boring operation removably attached to said door;

position detection means for detecting the distance covered by said vehicle and for recording visual images of an area surrounding said vehicle;

a radar system comprising underground radar control means for controlling said underground radar means and observation data recording means for recording said observation data of said underground radar means, said radar system recording in said data recording means information of the distance covered by said vehicle provided by



said position detection means, together with said observation data of said underground radar means; and

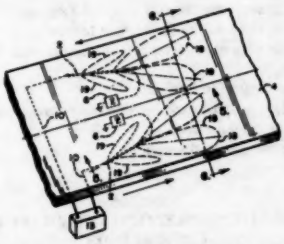
an image processing system for photographing a surface of an inner circumferential wall of a bored hole and for processing images thus photographed.

5,192,954

ROADWAY ANTENNAE

William K. Brockelsby; Conrad M. B. Walker; Michael H. Hryciuk, and Donald P. Gillis, all of Edmonton, Canada, assignors to Mark IV Transportation Products Corporation, Niles, Ill.

Continuation-in-part of Ser. No. 446,234, Dec. 5, 1989, which is a continuation-in-part of Ser. No. 383,169, Jul. 20, 1989, Pat. No. 4,937,581, which is a continuation of Ser. No. 195,400, May 13, 1988, Pat. No. 4,870,419, which is a continuation of Ser. No. 661,712, Oct. 17, 1984, abandoned, which is a continuation-in-part of Ser. No. 536,010, Sep. 26, 1983, abandoned, which is a continuation-in-part of Ser. No. 234,570, Feb. 13, 1981, abandoned. This application Mar. 8, 1991, Ser. No. 666,257
Int. Cl.[5] G01S *13/74*
U.S. Cl. 342—42 17 Claims



1. An antenna array embedded in the surface of a bi-directional multi-lane roadway having predetermined land widths for establishing radio frequency communication between a roadside interrogator and a transponder mounted on the underside of a vehicle moving along one of said roadway lanes comprising:

a plurality of radiating elements each having an associated electromagnetic field, said elements generally disposed in said roadway pavement and configured to generate an electromagnetic field alternating at a predetermined frequency, said field defining a transponder capture zone along and above said roadway lane and extending across

said lane width for communicating with said transponder; and,

interrogator output means supplying alternating current at said frequency to said radiating elements.

5,192,955

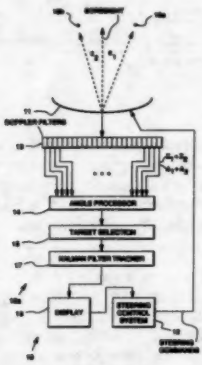
INDIVIDUAL TARGET ANGLE MEASUREMENTS IN A MULTIPLE-TARGET ENVIRONMENT

Bao N. Hoang, Laguna Hills, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Sep. 25, 1991, Ser. No. 765,346

Int. Cl.[5] G01S *13/44*

U.S. Cl. 342—80 **7 Claims**



1. A method of tracking a selected target in a multiple-target environment using a radar system, said method comprising the steps of:

receiving sum (Σ) and difference (Δ) signals indicative of respective directions of a plurality of targets;

processing composite sum and difference signals from output energy of two adjacent Doppler filters of a single target's frequency spectrum of the targets to decompose the sum and difference signals into respective individual components (Σ_1, Δ_1, and Σ_2, Δ_2);

processing the individual components (Σ_1, Δ_1, and Σ_2, Δ_2) of the sum and difference signals to compute respective angle signals indicative of the relative angular direction (ϵ_1, ϵ_2) to each of the respective targets;

determining a number of targets in the multiple-target environment;

selecting a target for tracking;

maintaining a stable track on a selected target using a Kalman filter tracker; and

displaying the selected target.

5,192,956

CASCADED COMPLEMENTARY PHASE CODE COMPRESSOR

Henry E. Lee, Ellicott City, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 13, 1991, Ser. No. 790,909

Int. Cl.[5] G01S *7/288, 13/30*

U.S. Cl. 342—204 **3 Claims**

1. A code decoder, comprising:

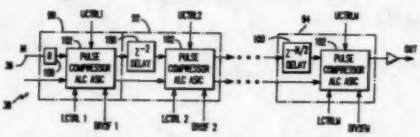
input means for receiving a phase code signal; and

decoding means for performing bidirectional crossover cascade compression of the complementary phase code signal, wherein when said code has a length of N, where N is a positive integer, said decoding means comprises $\log_2 N$ decoding stages,

wherein each of said stages includes a stage number K from 1 to $\log_2 N$ and comprises:

first and second input paths;

a delay unit connected to said first input path and providing a delay of 2^{k-1} time units;



an adder connected to said delay unit and said second input path; and

an adder/subtracter connected to said delay unit and said second input path.

5,192,957

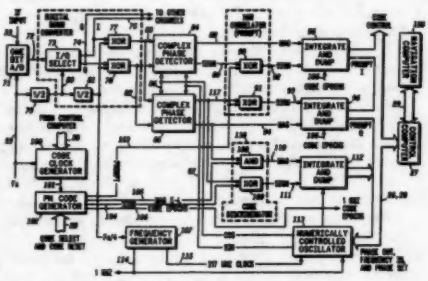
SEQUENCER FOR A SHARED CHANNEL GLOBAL POSITIONING SYSTEM RECEIVER

Howard L. Kennedy, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 1, 1991, Ser. No. 724,261

Int. Cl.[5] H04B *7/185*; G01S *5/02*

U.S. Cl. 342—357 **32 Claims**



1. A shared channel Global Positioning System (GPS) receiver for receiving a plurality of coded satellite signals from a plurality of satellites, said signals exhibiting Doppler shifting, said GPS receiver comprising:

means for converting said coded satellite signals to intermediate frequency signals;

A/D means coupled to said means for converting, said A/D means for simultaneously translating said intermediate frequency signals for said plurality of coded satellite signals to a plurality of digital signals;

correlation means coupled to said A/D means, said correlation means for simultaneously separating each of said plurality of digital signals corresponding to each said satellite to provide channel information signals for each said satellite;

channel means coupled to said correlation means, said channel means for estimating a plurality of parameters describing each satellite's expected position and an expected frequency of transmission of said coded satellite signals including Doppler compensation for each of said plurality of said satellites on a time division multiplexed basis; and

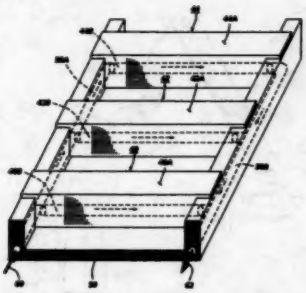
processor means coupled to said correlation means and to said channel means, said processor means for retrieving information transmitted from each of said satellites in response to channel information signals.

5,192,958

METHOD AND APPARATUS TO CONTROL OVERALL WRITE LENGTH IN LED PRINT BARS

George A. Charnitski, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 9, 1991, Ser. No. 773,793
Int. Cl.[5] G01D 9/42
U.S. Cl. 346—107 R 5 Claims



1. An image printer for forming images at a photosensitive surface, moving in a process direction comprising:

a plurality of image print bars aligned parallel to each other and perpendicular to the process direction, each print bar including at least an LED array,

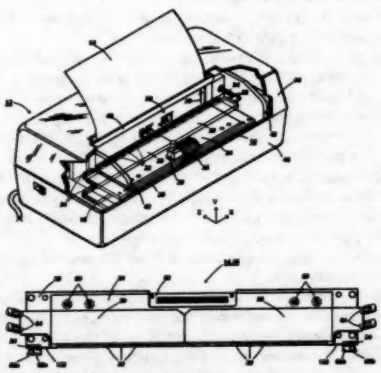
a manifold subframe adapted to securely mount said arrays in said parallel and perpendicular alignment, said subframe having apertures therethrough for circulating a cooling medium through said subframe and through the interior of said arrays, said circulating media maintaining said arrays and said subframe at the same temperature.

5,192,959

ALIGNMENT OF PAGEWIDTH BARS

Donald J. Drake, Rochester; Ivan Rezanka, Pittsford, and Fredrick A. Warner, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 3, 1991, Ser. No. 709,255
Int. Cl.[5] B41J 2/155
U.S. Cl. 346—140 R 23 Claims



1. An apparatus having a large area semiconductive device which is positioned to operate with respect to a target, said semiconductive device being formed by linear placement of functional sub-units, each functional sub-unit having a planar semiconductive substrate with an array of active elements, and supporting circuitry on a first surface thereof, said functional sub-units having been divided from a larger semiconductive wafer, comprising:

a reference plate;

a plurality of said functional sub-units affixed to said reference plate to form a linear array of sub-units thereon;

at least two locating sub-units affixed on opposite ends of said reference plate to form alignment pads thereon; and

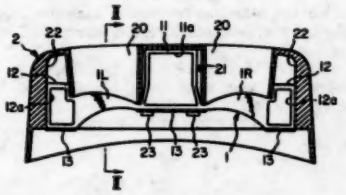
means, located within the apparatus, for receiving said alignment pads in order to align said reference plate and the affixed linear array of sub-units in at least one dimension with respect to the target wherein the first surface of the functional sub-units is unobstructed by the receiving means.

5,192,960

GLASSES FOR STEREOSCOPIC VIEWING

Toshio Komamura, Tokyo, Japan, assignor to Yugen Kaisha Somasha, Tokyo, Japan

Filed Mar. 20, 1991, Ser. No. 672,434
Claims priority, application Japan, Mar. 22, 1990, 2-29229[U]
Int. Cl.[5] G02C 13/00
U.S. Cl. 351—41 3 Claims



2. Stereoscopic glasses comprising:

an integral lens body having a left lens and a right lens;

said left lens and said right lens each having a front convex surface and a rear concave surface; and

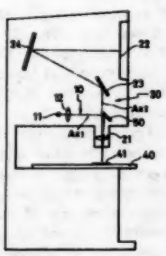
a lens frame having upper and lower halved portions between which said lens body is positioned and held.

5,192,961

REFLECTING ILLUMINATION TYPE PROJECTING DEVICE

Kazushi Yoshida; Ryota Ogawa, and Tetsuya Abe, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 383,079, Jul. 21, 1989, abandoned. This application Apr. 25, 1991, Ser. No. 691,673
Claims priority, application Japan, Jul. 22, 1988, 63-183099; Jan. 13, 1989, 1-6786; May 26, 1989, 1-133260; Jun. 19, 1989, 1-157578
Int. Cl.[5] G03B 21/28, 21/08
U.S. Cl. 353—66 74 Claims



1. A reflecting illumination projecting device, comprising:

a projecting lens having an optical axis intersecting an object to be tested;

a light source portion for illuminating said object through said projecting lens;

a surface onto which an image of said object is projected by light that is reflected from said object and which passes through said projecting lens; and

an optical path separating element disposed in substantially at an exit pupil of said projecting lens, said optical path separating element being formed with a total reflecting mirror portion for reflecting substantially all illumination light or reflected light, said optical path separating element having a transmitting portion for transmitting a remaining light, thereby making said illuminating light incident to said projecting lens and guiding said reflected light towards said surface.

5,192,962

CONVERGING REFLECTOR AND LIQUID CRYSTAL DISPLAY DEVICE

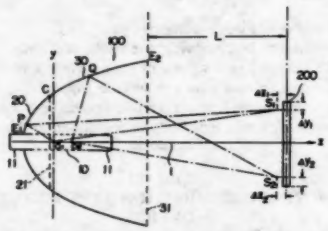
Masami Nishida; Masataka Izawa, and Kunimoto Tsuchiya, all of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed May 29, 1992, Ser. No. 706,538

Claims priority, application Japan, May 29, 1990, 2-139396; Oct. 25, 1990, 2-288211

Int. Cl.[5] G03B *21/14*; F21V *7/12*

U.S. Cl. 353—98 **15 Claims**



6. A liquid crystal display device, comprising:

a converging reflector with a linear light source having two end points positioned with a predetermined space therebetween;

a first reflection surface having a curvature so that one of the two end points forms one focal point, and a second reflection surface arranged adjacently to said first reflection surface and having a second curvature so that a second of the two end points forms one focal point; and

a liquid crystal panel for selectively passing a light reflected from said converging reflector,

wherein a contact point of said first and second reflection surfaces is positioned in the vicinity of a plane which is perpendicular to an optical axis of light reflected from said converging reflector onto said liquid crystal panel, and which passes through said one of said two end points of the linear light source, and

wherein other focal points of said first and second reflection surfaces are positioned between said light source and a plane of convergent projection of said liquid crystal panel, in a position relatively closer to said plane of convergent projection of said liquid crystal panel than said light source and inwardly of first and second ends of said plane of convergent projection of said liquid crystal panel, respectively.

5,192,963

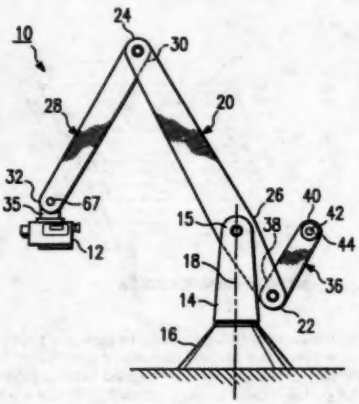
CAMERA SUSPENSION APPARATUS

Kenneth R. Hill, 517 Sunset Ave., Dallas, Tex. 75208

Filed Jun. 12, 1991, Ser. No. 713,790

Int. Cl.[5] G03B *29/00*

U.S. Cl. 354—81 **15 Claims**



1. Camera suspension apparatus supported on a base, comprising:

a yoke rotatably mounted on the base for rotation about a vertical axis, the yoke including a pair of parallel-spaced structural members;

a primary lever arm having first and second ends and a medial portion pivotably mounted on the yoke to form a fulcrum, the primary lever arm including a pair of parallel-spaced structural members;

a counterweight arm having first and second ends, the first end of the counterweight arm pivotally attached to the first end of the primary lever arm;

each of the structural members of the primary lever arm including an opening in the first end thereof and wherein the first end of the counterweight arm is pivotally attached to the first end of the primary lever arm in a first support means comprising:

a high torque insert supported in each opening in the first end of the primary lever arm;

a cross member extending across the spaced structural members of the first end of the primary lever arm;

a bearing supported on the cross member; and

a bearing carrier attached to the bearing for rotation therewith, the bearing carrier for supporting the first end of the counterweight arm;

a secondary arm having first and second ends, the first end of the secondary arm pivotally attached to the second end of the primary lever arm, the secondary arm including a pair of parallel-spaced structural members;

means for supporting a camera from the second end of the secondary arm;

balance means including first and second sprockets mounted on the bearing carrier of the first support means, the balance means responsive to pivoting of the secondary arm about the second end of the primary lever arm in a first direction for pivoting the counterweight arm about the first end of the primary lever arm in a second opposed direction; and

level means for maintaining the camera level relative to the base as the secondary arm is pivoted about the second end of the primary lever arm.

5,192,964

CAMERA HAVING BLURRING MOVEMENT CORRECTION MECHANISM

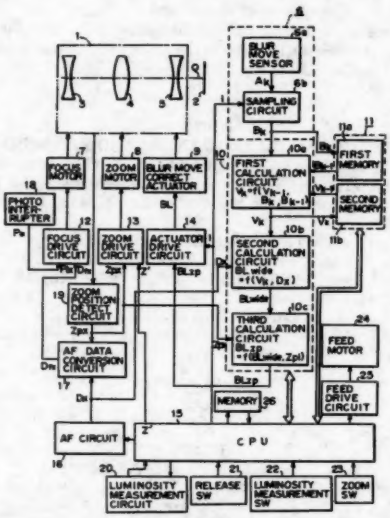
Junichi Shinohara, Yokohama; Yoshimi Ohno, Kawasaki; Yoshio Serikawa, Ageo, and Tohru Nishida, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 4, 1992, Ser. No. 847,759

Claims priority, application Japan, Mar. 4, 1991, 3-61068; Mar. 4, 1991, 3-61069; Mar. 6, 1991, 3-63685; Nov. 30, 1991, 3-342441

Int. Cl.[5] G03B 5/00

U.S. Cl. 354—202 12 Claims



1. A camera having blurring movement correction mechanism comprising:

a blurring movement correction optical element disposed in an optical path of a photo-taking optical system so as to correct shift of an image formed on a film surface caused by movement of hands holding a camera body;

a blurring movement correction actuator for moving said optical element in a necessary direction for correcting said shift of the image on the film surface;

a blurring movement detection unit for obtaining a blurring movement detection data by converting said blurring movement of said camera body to an electric signal;

a first memory means for temporarily registering said detection data output from said detection unit;

a calculation means for calculating blurring movement correction data for correcting said shift of the image formed on the film surface caused by movement of hands holding the camera body by actuating said optical element by said actuator; and

a second memory means for temporarily registering an output data of calculation from said calculation means,

said calculation means being so constructed that said blurring movement correction data is predictively calculated on the basis of said detection data of this time obtained from said detection unit, said detection data of the preceding time registered in said first memory means and said correction data of the preceding time registered in said second memory means so as to correct said shift of the image formed on the film surface by actuating said optical element by said actuator.

5,192,965

AUTOMATIC FOCUSING DEVICE

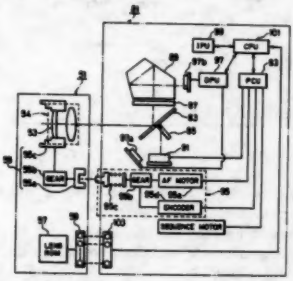
Noboru Suzuki, and Shigeo Toji, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo K.K., Tokyo, Japan

Continuation of Ser. No. 542,607, Jun. 25, 1990, abandoned, which is a continuation of Ser. No. 364,505, Jun. 9, 1989, Pat. No. 4,952,962, which is a continuation of Ser. No. 143,905, Jan. 11, 1988, abandoned. This application May 5, 1992, Ser. No. 879,125

Claims priority, application Japan, Jan. 9, 1987, 62-1537[U]; Jan. 10, 1987, 62-2049[U]

Int. Cl.[5] G03B 13/36

U.S. Cl. 354—400 14 Claims



1. An automatic focusing device comprising:

a lens system including a focusing lens;

drive means for driving said focusing lens to a focused position relative to an object;

a first means for calculating an amount of defocusing for the object;

a second means for determining whether the calculated amount of defocusing of said first means is effective in controlling said drive means;

a third means for detecting a power source voltage for said drive means; and

a first comparator for comparing the detected power source voltage of said third means with a reference voltage;

wherein said drive means drives said focusing lens to the focused position according to a DC mode of operation when said second means determines that the calculated amount of defocusing is not effective in controlling said drive means and said first comparator determines that the detected power source voltage is less than said reference voltage.

5,192,966

AUTOMATIC FOCUS CONTROL DEVICE

Masataka Hamada, Minamikawachi; Tokuji Ishida, Daito; Kenji Ishibashi, Sakai; Nobuyuki Taniguchi, Nishinomiya, and Hiroshi Ootsuka, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 741,785, Aug. 6, 1991, which is a division of Ser. No. 508,274, Apr. 11, 1990, Pat. No. 5,040,015, which is a division of Ser. No. 374,590, Jun. 28, 1989, Pat. No. 4,924,250, which is a continuation of Ser. No. 247,079, Sep. 20, 1988, abandoned, which is a division of Ser. No. 32,738, Mar. 30, 1987, Pat. No. 4,816,856. This application Jun. 22, 1992, Ser. No. 901,797

Claims priority, application Japan, Mar. 31, 1986, 61-74580

Int. Cl.[5] G03B 13/36

U.S. Cl. 354—402 8 Claims

1. An automatic focusing device of a camera, comprising:

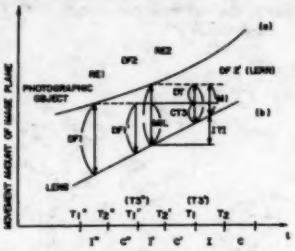
means for repeatedly detecting a focus state of a photographing lens of said camera to repeatedly produce a focus signal representative of the detected focus state;

means for setting a first predetermined time;

means for foreseeing an in-focus position of said photographing lens after said predetermined time has passed, and for

calculating a lens shifting value which is necessary for brining said photographing lens into its in-focus position after said first predetermined time has passed on the basis of a result of a past focus signal and the predetermined time;

means for setting a second predetermined time in accordance with said lens shifting value calculated by said foreseeing and calculating means;



means for calculating a resultant lens shifting value on the basis of a result of the past focus signal and the second predetermined time, and

means for driving said photographing lens in accordance with said resultant lens shifting value calculated by said calculating means.

5,192,967

Patent Not Issued For This Number

5,192,968

PHOTOMETER

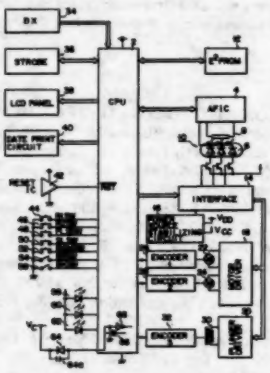
Kenichi Kishida; Atsushi Maruyama, and Akira Watanabe, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 12, 1991, Ser. No. 790,478

Claims priority, application Japan, Nov. 14, 1990, 2-309910

Int. Cl.[5] G03B *7/08*; G01J *1/46*; H01J *40/14*

U.S. Cl. 354—410 **13 Claims**



1. A photometer for a camera, comprising:

a CPU having an input/output port connected to an N-MOS type open drain transistor with its source grounded and to a C-MOS type input circuit for inverting an input voltage with a value higher than a predetermined threshold value and outputting the inverted voltage;

a photodiode, having a cathode and an anode, for outputting a photoelectric current corresponding to an incident light amount, said anode being connected to said input/output port, said cathode being connected to a power source; and

a capacitor connected externally in parallel to said photodiode or constituted equivalently in said photodiode,

wherein, for carrying out a photometric operation, said CPU includes:

charging means for turning on said transistor and charging said capacitor up to a predetermined potential;

discharging means for turning off said transistor, after the charging, and releasing the charge in said capacitor by means of said photoelectric current;

counting means for counting a time from the turning-off of the transistor to the inversion of the output of the C-MOS type input circuit; and

luminance detecting means for detecting the luminance of an object on the basis of the count value of the counting means.

5,192,969

STEREOGRAPHIC PROJECTING AND RECORDING METHOD AND APPARATUS THEREFOR

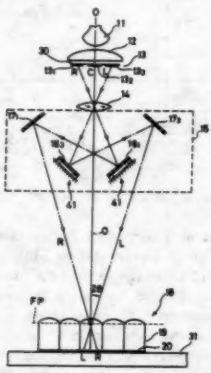
Shunkichi Igarashi, Tokyo, and Seiichi Taguchi, Kanagawa, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 27, 1992, Ser. No. 858,652

Claims priority, application Japan, Mar. 29, 1991, 3-67260; Apr. 19, 1991, 3-88037; May 29, 1991, 3-125715; Aug. 13, 1991, 3-203044

Int. Cl.[5] G03B *27/32*, *35/14*

U.S. Cl. 355—22 **37 Claims**



1. A stereographic projecting method by which a plurality of original images from at least three different viewpoints are projected as a plurality of linear picture elements onto a projection medium through a plurality of lenticular lenses of a lenticular sheet, comprising the steps of:

launching beams of light from the respective original images into a single projection lens;

separating the beams of transmitted light for the respective original images in a mirror optical assembly consisting of mirror units each composed of at least two mirrors for each original image;

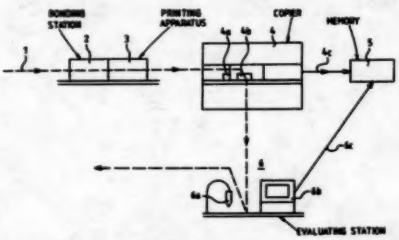
adjusting optical pathlengths of the respective beams to said projection medium by means of said mirror optical assembly; and

allowing said beams to be incident on lenticular lenses at predetermined angles of projection so that they are imaged as linear picture elements on said projection medium, whereby the original images from at least three viewpoints are projected simultaneously onto said projection medium.

5,192,970
METHOD AND ARRANGEMENT FOR COPYING FILMSTRIPS

Günter Findeis, Sauerlach; Wilhelm Nitsch, München; Hans-Juergen Rauh, Strassl.-Hailafing; Wolfgang Zahn; Helmut Treiber, both of München, and Hans-Georg Schindler, Holzkirchen, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 13, 1991, Ser. No. 760,018
Claims priority, application Fed. Rep. of Germany, Oct. 1, 1990, 4031022
Int. Cl.[5] G03B *27/52*
U.S. Cl. 355—41 18 Claims



1. A method of copying one or more masters of a strip of masters, comprising the steps of connecting said strip to a band so that the band extends by said masters; providing said band with an identification code for each of said masters at a location related to the position of the respective master; deriving base data relating to the optimum amount of copy light for each of said masters; storing the identification code for each of said masters in a memory together with the base data for the respective master; reading out from the memory the stored base data for at least one selected master using the respective code on the band and the corresponding code in the memory; and making a copy of the selected master using the respective base data.

5,192,971
IMAGE FORMING APPARATUS WITH IMAGE FORMING INTERRUPTION CAPABILITIES

Katsuichi Smimizu, Hoya; Osamu Sawamura, Atsugi; Shunichi Masuda, Tokyo; Masahiro Tomosada, Kawasaki, and Hisashi Sakamaki, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 280,497, Dec. 6, 1988, abandoned, which is a continuation of Ser. No. 28,025, Mar. 17, 1987, Pat. No. 4,816,868, which is a continuation of Ser. No. 604,924, Apr. 27, 1984, abandoned, which is a continuation of Ser. No. 329,019, Dec. 9, 1981, abandoned, which is a continuation of Ser. No. 882,626, Mar. 1, 1978, Pat. No. 4,314,754. This application Feb. 7, 1990, Ser. No. 477,113
Claims priority, application Japan, Mar. 2, 1977, 52-22982
Int. Cl.[5] G03G *21/00, 15/04*
U.S. Cl. 355—206 22 Claims

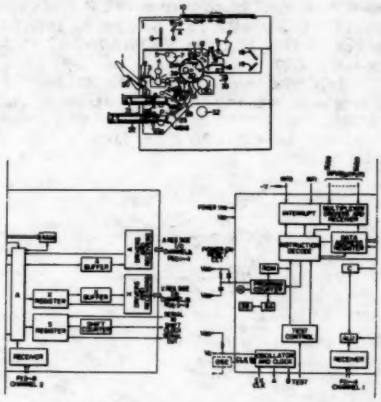
1. An image processing apparatus comprising:

processing means for forming an image on a recording medium, said processing means performing an adjustment operation after termination of the image forming operation;

input means for inputting a start instruction of image formation; and

control means comprising a program memory for storing a program for sequence-controlling said processing means and a program for monitoring an abnormality, and further comprising a data memory capable of storing data associated with the image formation for controlling said processing means and for monitoring the abnormality on the basis of data stored in said data memory,

wherein, in the event that a start instruction is entered at said input means while said processing means performs the adjustment operation after termination of the image forming operation, said control means is operable to cause data indicating entry of the start instruction to be set to said data memory, and wherein, in a first mode where an abnormality is not detected, said control means is operable to cause said processing means to perform a new image

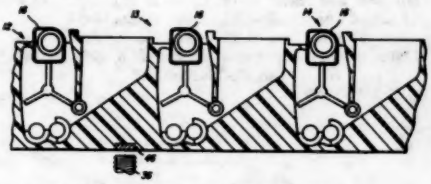


forming operation, without entry of a new start instruction, if the data indicating entry of the start instruction is set to said data memory, and in a second mode where an abnormality is detected, said control means is operable to cause said processing means to be inhibited from performing a new image forming operation, even if the data indicating entry of the start instruction is set to said data memory.

5,192,972
DEVELOPER MIX MONITORING FOR COLOR DEVELOPER STATIONS

Arthur S. Kroll, and Wunan Chang, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 24, 1990, Ser. No. 632,677
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—208 20 Claims



1. An electrostatographic machine comprising:

at least one development unit having a chamber containing a developer mixture of carrier particles and toner particles in a predetermined desired concentration;

monitor means for producing a signal representative of the concentration of toner particles in the developer mixture in the chamber;

means, independent of said developer mixture, for simulating to said monitor means an environmentally stable predetermined toner concentration such that said monitor means produces a signal having a value corresponding to the predetermined toner concentration; and

means for comparing the value of the signal corresponding

to the predetermined toner concentration to a stored base value to produce an indication of the calibration of the monitor means.

5,192,973

COVERING AND CLEANING DEVICE FOR THE OPTICAL CHARACTER GENERATOR IN AN ELECTROPHOTOGRAPHIC PRINTING DEVICE

Gerhard Hickisch, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

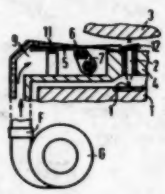
PCT No. PCT/DE88/00117, § 371 Date Feb. 13, 1990, § 102(e) Date Feb. 13, 1990, PCT Pub. No. WO87/02162, PCT Pub. Date Apr. 9, 1987

PCT Filed Mar. 4, 1988, Ser. No. 473,950

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1987, 3728563

Int. Cl.[5] G03G *21/00, 15/04*

U.S. Cl. 355—215 8 Claims



1. A character generator for a printing device operating according to the principle of electrophotography, said character generator comprising the following features:

a plurality of light-emitting elements having light exit regions at a surface of the character generator and being arranged on a carrier part;

a covering and cleaning device for said light exit region of said light-emitting elements of said character generator; and

wherein said covering and cleaning device is fashioned such that it covers said light exit region when said character generator is in an idle condition in order to prevent the penetration of contaminating particles, and exposes and cleans said light exit region when said character operator is in an operating condition.

5,192,974

CONTRACT CHARGER

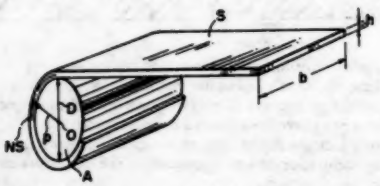
Akihito Ikegawa, Sakai; Masaki Asano, Amagasaki; Shuji Iino, Hirakata, and Izumi Osawa, Ikeda, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 30, 1992, Ser. No. 827,337

Claims priority, application Japan, Feb. 6, 1991, 3-015461

Int. Cl.[5] G03G *15/02*

U.S. Cl. 355—219 13 Claims



1. A contact charger for charging an electrostatic latent image bearing member having a surface, comprising:

a support member;

a flexible film supported at a side end portion by the support member and having a free end portion adapted to contact the surface of the electrostatic latent image bearing member, said film having a bending moment M defined by the following formula,

$$0.001\ (g.cm) \leq M \leq 20(g.cm),$$

$$M = EI/\rho$$

wherein E is Young's modulus (g/cm^2) of the film, I is the second moment of area (cm^4) of the film and ρ is a radius of curvature (cm) of the film when the film is curved; and

a power source for applying a charging voltage to the film to charge the surface of the electrostatic latent image bearing member.

5,192,975

IMAGE FORMING APPARATUS WITH AN IMAGE SCANNING APPARATUS AND AN AUTOMATIC DOCUMENT FEEDER

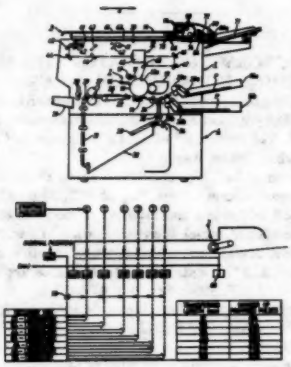
Fumito Ide, and Noriyuki Nomura, both of Kanagawa, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 24, 1991, Ser. No. 718,409

Claims priority, application Japan, Jun. 25, 1990, 2-166324

Int. Cl.[5] G02G *15/04*

U.S. Cl. 355—235 9 Claims



1. An image forming apparatus, comprising:

a platen on which a document having an image is placed:

means for positioning a first end of the document on the platen:

means for detecting a position of a second end different from the first end of the document positioned by the positioning means on the platen;

means for scanning the image of the document from a starting position of the second end detected by the detecting means; and

means for forming an image on an image bearing member, the image formed corresponding to the image scanned by the scanning means.

5,192,976

SHEET ORIGINAL FEEDING APPARATUS WITH DETACHABLE AUXILIARY FEEDER

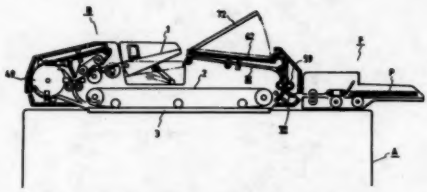
Tadayuki Kitajima, Yokohama; Masataka Naito, Kawasaki; Noriyoshi Ueda, Yokohama; Katsuaki Hirai; Takeshi Honjo, both of Kawasaki; Yuji Morishige, Yokohama, and Akimaro Yoshida, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 868,328, Apr. 14, 1992, abandoned, which is a continuation of Ser. No. 610,045, Nov. 5, 1990, Pat. No. 5,132,741. This application Aug. 3, 1992, Ser. No. 921,615

Claims priority, application Japan, Nov. 5, 1989, 1-287741; Nov. 5, 1989, 1-287742; Nov. 5, 1989, 1-287743; Nov. 5, 1989, 1-287744

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—309 7 Claims



2. A sheet original feeding apparatus, comprising:

a sheet original stacking tray on which sheet originals to be treated are stacked as an original stack;

a sheet original separating means for separating and supplying the sheet original one by one from the original stack stacked on said sheet original stacking tray;

a sheet original feeding path for directing the sheet original separated by said sheet original separating means;

a sheet original feeding means for feeding the sheet original directed by said original feeding path to an image reading portion;

a sheet original ejecting path for ejecting the sheet original fed by said sheet original feeding means to said sheet original stacking tray; and

an auxiliary sheet original feeding apparatus which can be connected to said sheet original ejecting path, and wherein, when said auxiliary sheet original feeding apparatus is connected, said sheet original ejecting path serves as a bypass for directing the sheet original from said auxiliary sheet original feeding apparatus to said sheet original stacking tray.

5,192,977

MULTI-COLOR IMAGE FORMING APPARATUS

Tokuharu Kaneko, Yokohama; Miho Nakayama, Tokyo; Masanori Miyata, Yokohama; Takeshi Honjo, Kawasaki; Hideki Adachi, Kawasaki, and Toshiya Kanazawa, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 321,840, Mar. 10, 1989, Pat. No. 5,079,598. This application Oct. 15, 1991, Ser. No. 775,769

Claims priority, application Japan, Mar. 14, 1988, 63-059660; Mar. 14, 1988, 63-059661; Mar. 14, 1988, 63-059662; Mar. 14, 1988, 63-059663; Mar. 14, 1988, 63-059664; Mar. 14, 1988, 63-059665

Int. Cl.[5] G03G *15/00, 15/01*

U.S. Cl. 355—313 9 Claims

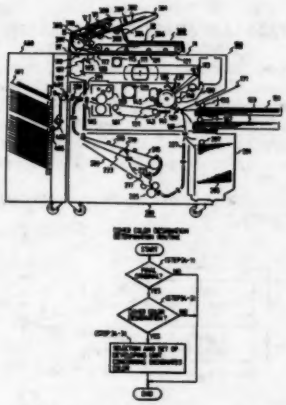
1. An image forming apparatus comprising:

feeding means for feeding originals;

image forming means for forming images of the originals fed by said feeding means on recording sheets with a first color or a second color;

selection means for selecting a specific mode in which a cover sheet is prepared; and

control means for controlling said image forming means in such a manner that when the specific mode is selected by said selection means, an image of a specific one of the originals fed by said feeding means is formed with the first



color, and images of the other originals are formed with the second color.

5,192,978

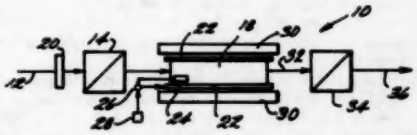
APPARATUS AND METHOD FOR REDUCING SOLAR NOISE IN IMAGING LIDAR, UNDERWATER COMMUNICATIONS AND LIDAR BATHYMETRY SYSTEMS

R. Norris Keeler, McLean, Va., assignor to Kaman Aerospace Corporation, Bloomfield, Conn.

Filed Sep. 17, 1991, Ser. No. 761,065

Int. Cl.[5] G01C *3/08*

U.S. Cl. 356—5 48 Claims



1. A light imaging system for detection and ranging of a volume in water, comprising:

laser transmitter means for providing a transmitted light beam, said transmitted light beam comprising a plurality of short pulses of light of a first selected wavelength;

expanding optics means for expanding said transmitted light beam and projecting an expanded light beam at said volume in water wherein said expanded light beam is reflected back from said volume generating a return light beam;

collecting optics means for collecting said return light beam and providing a collected light beam;

dividing means for dividing said collected light beam into first and second divided light beams;

first filter means for filtering said first divided light beam, said filter means rejecting substantially all wavelengths other than said first selected wavelength, said first filter means providing a first filtered light beam;

second filter means for filtering said second divided light beam, said second filter means rejecting substantially all wavelengths other than said first selected wavelength, said second filter means providing a second filtered light beam;

recombining means for recombining said first and second filtered light beams to provide a combined light beam; and detector means for detecting said combined light beam.

5,192,979

METHOD AND APPARATUS FOR RECOGNIZING AND IDENTIFYING TARGETS

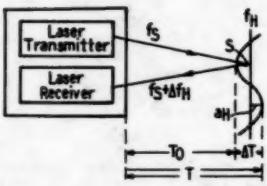
Ludger Grage, Eichenau; Wolfgang Kranz, Munich, and Gerhard Brumme, Eching, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 796,352, Sep. 18, 1985, abandoned. This application Feb. 7, 1991, Ser. No. 652,374

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1984, 3435295

Int. Cl.[5] G01S *13/00*; **G01P** *3/36*; **H04B** *10/00*

U.S. Cl. 356—28.5 **15 Claims**



1. A method using laser detecting and identifying targets on the basis of radar principles, comprising the steps of:

(a) generating a laser beam as a carrier exclusively having a fixed frequency f_{LO};

(b) shifting the carrier with an intermediate frequency f_{ZF} to obtain a further laser beam including the frequencies f_{LO} and f_{ZF};

(c) transmitting the further laser beam from a transmitter and illuminating a target having a surface in continuous vibration independently of said further laser beam with the further laser beam causing the production, due to the continuous, independent vibration of said surface, of at least one frequency f_H producing a frequency-modulated spectrum Δf_H in a reflected laser beam;

(d) receiving the reflected laser beam having a carrier frequency $f-f_{LO}+F_{ZF}$ and the frequency-modulated spectrum Δf_H;

(e) mixing the received reflected laser beam with the carrier frequency f_{LO} to obtain a modulation spectrum at the intermediate frequency f_{ZF}; and

(f) modulating the remaining frequency signal to remove the intermediate frequency f_{ZF} to provide a target signal having the frequency f_H of the vibrating surface for identification of the target.

5,192,980

APPARATUS AND METHOD FOR METHOD FOR SPATIALLY- AND SPECTRALLY-RESOLVED MEASUREMENTS

Arthur E. Dixon, 41 Lane Crescent, Kitchener, Ontario, Canada N2K 1P2 ; Savvas Damaskinos, Kitchener, and John W. Bowron, Waterloo, both of Canada, assignors to A. E. Dixon, Waterloo, Canada

Filed Jun. 26, 1991, Ser. No. 721,282

Claims priority, application United Kingdom, Jun. 27, 1990, 9014263

Int. Cl.[5] G01J *3/18, 3/26*; **G01N** *21/64*

U.S. Cl. 356—326 **8 Claims**

1. A confocal scanning beam optical microscope for spectrally-resolved measurements comprising

means for supporting a specimen to be observed and measured,

an illumination source producing a light beam directed along an optical path toward said specimen,

means for focusing the light beam to a diffraction-limited spot in a prescribed specimen plane,

means for scanning the light beam to move the diffraction-limited spot in a predetermined scan pattern on said specimen plane,

a detection arm receiving light reflected, scattered or emitted from said diffraction-limited spot in said specimen plane comprising

a pinhole and a focusing lens for obtaining a focal point for confocal detection of the light returning from said specimen,

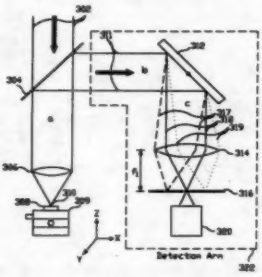
a detector placed behind said pinhole,

means for spectrally resolving said reflected, scattered or emitted light passing from said specimen back toward said focusing lens, pinhole and detector,

a beamsplitter reflecting light returning from said specimen into said detection arm,

wherein said spectrally-resolving means in said detection arm is selected from the group consisting of diffraction gratings and prisms that can be rotated to direct light of various wavelengths towards said focusing lens, whereby the diffraction-limited spot at the specimen acts like the entrance aperture of an integrated monochromator, and the pinhole in front of the detector acts like its exit aperture,

means for measuring the intensity distribution with respect to wavelength of said reflected, scattered or emitted light.



5,192,981

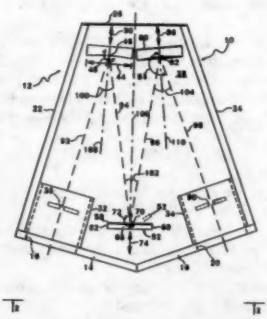
CZERNY-TURNER MONOCHROMATOR

Warren S. Slutter, Dunellen; Joseph Marcovecchio, Berkeley Heights; Robert E. Heinz, Piscataway, and David A. Kolb, Old Bridge, all of N.J., assignors to Spex Industries, Inc., Edison, N.J.

Filed Apr. 30, 1990, Ser. No. 516,784

Int. Cl.[5] G01J *3/18*

U.S. Cl. 356—334 **7 Claims**



1. In a monochromator of the Czerny-Turner type including

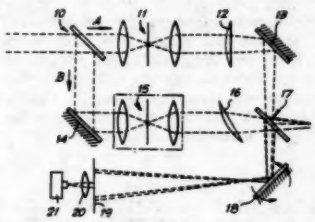
an entrance slit, a collimating mirror for receiving light output by said entrance slit, a planar grating for receiving light reflected by said collimating mirror, a focusing mirror for receiving light reflected by said grating, and an exit slit for receiving light focused by said focusing mirror, light generally proceeding along an optical axis which defines a plane, from said entrance slit to said collimating mirror, from said collimating mirror to said grating, from said grating to said focusing mirror and from said focusing mirror to said exit slit, the improvement comprising a toroidal collimating mirror in combination with a spherical focusing mirror, wherein the tangential focal length of said toroidal mirror substantially equals the focal length of said spherical mirror, the sagittal focal length of said toroidal mirror being less than the focal length of said spherical mirror and said sagittal focal length is measured in a plane perpendicular to the plane defined by the optical axis of the monochromator, wherein the angle of incidence with respect to the angle of reflection of the optical axis of the monochromator at the toroidal mirror is generally about 23.7 degrees and the difference between the angle of incidence and angle of reflection of the optical axis at the spherical mirror is generally about 28.2 degrees.

5,192,982

CODED-FRINGE INTERFEROMETRIC METHOD AND DEVICE FOR WAVEFRONT DETECTION IN OPTICS

Antonio Lapucci, Florence, Italy, assignor to Office Galileo S.P.A., Florence, Italy

Filed Apr. 11, 1991, Ser. No. 684,690
Claims priority, application Italy, Apr. 13, 1990, 9367 A/90
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—345 **17 Claims**



1. A method for detection of a wavefront of a beam, the method comprising the steps of:

providing a Mach-Zehnder interferometric configuration;

constructing a different spacial carrier frequency for each y value in an intensity function I(x,y);

frequency coding phase information of a plurality of transverse profiles in said spacial carrier frequency of fringes present in said intensity function I(x,y);

acquiring a signal representing a section of said intensity function I(x,y) parallel to an x axis; and

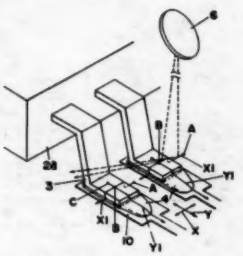
processing a low frequency portion of said signal, said low frequency portion being centered around a spacial carrier frequency, said processing using Fourier analysis techniques in order to reconstruct a phase of the beam and thus detect the wavefront of the beam.

5,192,983

APPARATUS FOR AND METHOD OF CHECKING EXTERNAL APPEARANCE OF SOLDERING STATE

Nobufumi Tokura, Fukuoka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 13, 1990, Ser. No. 626,051
Claims priority, application Japan, Dec. 19, 1989, 1-330754; Oct. 9, 1990, 2-271094
Int. Cl.[5] G01B *11/24*; G01N *21/00*
U.S. Cl. 356—376 **6 Claims**



1. A method of checking an external appearance of a soldering fillet; comprising the steps of scanning a laser beam on one of a plurality of leads extended sideways from a mold member of an electronic component mounted on a circuit board, in a direction traversing the lead, and receiving the laser beam reflected by the lead, thereby to detent a widthwise center of the lead by light receiving means, scanning the laser beam in an extended direction of the lead so as to pass through the detected center of the lead and thereby to project the laser beam on the solder fillet, and receiving resulting reflected light by light receiving means which is disposed at a position above the lead and aslant a direction intersecting orthogonally to the extended direction of the lead, so as to measure a shape of a solder fillet.

5,192,984

APPARATUS AND METHOD FOR DETERMINATION OF CONCENTRATIONS

Gary R. Beecher, Laurel; David L. Kemper, Silver Spring, and John E. Jordan, Germantown, all of Md., assignors to Environmental Analytical Systems, Inc., Elkridge, Md.

Filed Dec. 19, 1990, Ser. No. 630,087
Int. Cl.[5] G01N *21/01*
U.S. Cl. 356—433 **9 Claims**

1. A method for determining the concentration of a substance in a sample comprising the steps of:

a. providing a sample containing an unknown amount of a substance,

b. providing a volume of carrier fluid,

c. providing a stirred dilution chamber with a magnet located therein,

d. providing an electromagnetic coil located adjacent said stirred dilution chamber,

e. providing an electromagnetic coil activating circuit connected to said electromagnetic coil for providing electronic pulses to said coil,

f. providing a detector for detecting the presence of said substance,

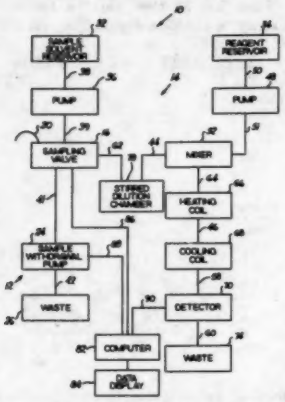
g. activating said electromagnetic coil activating circuit to provide electronic pulses to said coil to activate coil to cause stirring of the magnet in said stirred dilution chamber,

h. diluting said sample in a volume of carrier fluid in said stirred dilution chamber,

i. detecting the initial presence of said substance in said carrier fluid through the use of said detector,

j. detecting the subsequent lack of presence of said substance in said carrier fluid through the use of said detector, and

k. determining the elapsed time form said detection of the initial presence of said substance through the use of said detector and said detection of the subsequent lack of



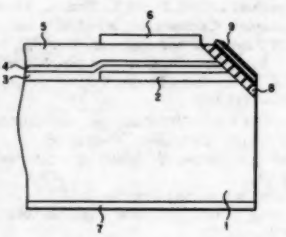
presence of said substance through the use of said detector to determine the concentration of the substance in said sample.

5,192,985

SEMICONDUCTOR LIGHT-EMITTING ELEMENT WITH LIGHT-SHIELDING FILM

Hirohisa Abe, Kitakyushu, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 13, 1992, Ser. No. 819,858
Claims priority, application Japan, Jan. 16, 1991, 3-3433
Int. Cl.[5] H01L *33/00*
U.S. Cl. 257—13 **1 Claim**



1. A semiconductor light-emitting element, characterized by comprising:

a current blocking layer formed in a predetermined position on one surface of a substrate;

a first cladding layer formed to cover said current blocking layer;

an active layer formed on said first cladding layer;

a second cladding layer formed on said active layer;

a first ohmic electrode formed in a predetermined position on said second cladding layer;

a second ohmic electrode formed on another surface of said substrate; and

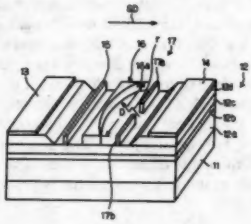
a light-shielding film adhered to and electrically isolated from at least one side surface including an edge of said substrate, said current blocking layer, said first cladding layer, said active layer and second cladding layer.

5,192,986

HETEROJUNCTION FIELD EFFECT TRANSISTOR EQUIPPED WITH ELECTROSTATIC LENS FOR IMPROVING BALLISTIC PROPAGATION

Yuji Ando, Tokyo, Japan, assignor to Nec Corporation, Tokyo, Japan

Filed Sep. 10, 1991, Ser. No. 757,297
Claims priority, application Japan, Sep. 17, 1990, 2-246598
Int. Cl.[5] H01L *29/80, 29/48, 29/161*
U.S. Cl. 257—192 **24 Claims**



1. A heterojunction field effect transistor fabricated on a semi-insulating substrate, comprising:

a) an epitaxial structure having a channel forming layer of a first compound semiconductor material and a carrier supplying layer of a second compound semiconductor material;

b) source and drain electrodes provided on said epitaxial structure at spacing, and held in contact with said epitaxial structure in an ohmic manner;

c) a focusing gate electrode formed on said epitaxial structure between said source and drain electrodes, and operative to form an electrostatic lens in said channel forming layer, a focal distance of said electrostatic lens being variable depending upon a biasing voltage level at said focusing gate electrode;

d) an emitter gate electrode formed on said epitaxial structure between said source electrode and said focusing gate electrode, and operative to produce an abrupt potential discontinuity in the bottom edge of the conduction band of said first compound semiconductor material for producing hot carriers; and

e) a detecting gate electrode formed on said epitaxial structure between said focusing gate electrode and said drain electrode, and spaced apart from said emitter gate electrode by a predetermined distance equal to or less than a mean free path of carriers in said channel forming layer, the amount of said carriers passing through said detecting gate electrode to said drain electrode being varied depending upon said focal distance.

5,192,987

HIGH ELECTRON MOBILITY TRANSISTOR WITH GAN/$AL_xGA_{1-x}N$ HETEROJUNCTIONS

Muhammed A. Khan, White Bear Lake; James M. VanHove, Eagan; Jon N. Kuznia, Fridley, and Donald T. Olson, Circle Pines, all of Minn., assignors to APA Optics, Inc., Blaine, Minn.

Filed May 17, 1991, Ser. No. 701,792
Int. Cl.[5] H01L *29/80*
U.S. Cl. 257—183.1 **12 Claims**

1. A transistor, comprising:

(a) a substrate;

(b) a buffer, the buffer being deposited on the substrate;

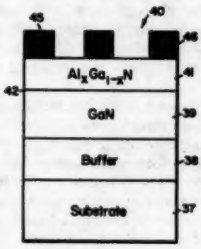
(c) a first active layer, the first active layer being composed essentially of GaN, the first active layer being deposited on the buffer;

(d) a second active layer, the second active layer being composed essentially of $Al_xGa_{1-x}N$, where x is greater than 0 and less than 1; and

(e) a plurality of electrical connections, the electrical connections residing on the second active layer, the plurality of electrical connections comprising:

(i) a source connection, the source connection residing on the second active region;

(ii) a gate connection, the gate connection residing on the second active region;



(iii) a drain connection, the drain connection residing on the second active region;

thereby permitting a difference of electrical potential to be applied to the second active region so as to permit operation as a transistor.

5,192,988

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE PRODUCED BY CHARGED-PARTICLE ETCHING

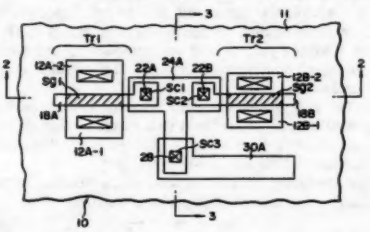
Ichiro Yoshii, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 11, 1991, Ser. No. 728,532

Claims priority, application Japan, Jul. 13, 1990, 2-186878

Int. Cl.[5] H01L *29/78, 29/10, 29/34, 29/06*

U.S. Cl. 257—774 **8 Claims**



1. A semiconductor integrated circuit device that has been formed on the basis of the design rules of 0.5 μm or less and undergone a process using charged particles, comprising:

a first insulating film;

a conducting layer formed on said first insulating film;

a second insulating film formed on said conducting layer; and

an opening made in said second insulating film so as to lead to said conducting layer; wherein

the relationship between the area S1 of said opening and the area S2 of said conducting layer is such as to meet the expression: $S1/S2 \leqq 1.8$.

5,192,989

LATERAL DMOS FET DEVICE WITH REDUCED ON RESISTANCE

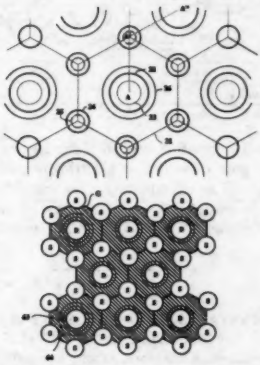
Tsutomu Matsushita; Teruyoshi Mihara; Masakatsu Hoshi, and Kenji Yao, all of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Nov. 27, 1990, Ser. No. 618,358

Claims priority, application Japan, Nov. 28, 1989, 1-306444; Mar. 8, 1990, 2-57578

Int. Cl.[5] H01L *29/78*

U.S. Cl. 257—342 **22 Claims**



1. A lateral DMOS FET device, comprising:

a cell structure formed by a plurality of unit cells, each of said unit cells including:

a source region of a first conduction type formed on one side of a substrate of said first conduction type;

a channel region of a second conduction type formed around the source region;

a plurality of drain contact regions of said first conduction type located around the channel region,

wherein the cell structure is formed in a hexagonal arrangement having hexagonal shaped cells, in which the drain contact regions are located on corners of a hexagonal outer form of each of said unit cells;

a source electrode, formed on said one side of the substrate, for connecting the source regions of the unit cells;

a gate electrode, formed on said one side of the substrate, over the channel regions of the unit cells; and

a drain electrode, formed on said one side of the substrate, for connecting the drain contact regions of the unit cells.

5,192,990

OUTPUT CIRCUIT FOR IMAGE SENSOR

Eric G. Stevens, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 315,367, Feb. 24, 1989, abandoned, which is a continuation of Ser. No. 65,686, Jun. 23, 1987, abandoned, which is a continuation of Ser. No. 908,851, Sep. 18, 1986, abandoned. This application Jun. 17, 1991, Ser. No. 715,865

Int. Cl.[5] H01L *29/7, 29/10, 29/86*

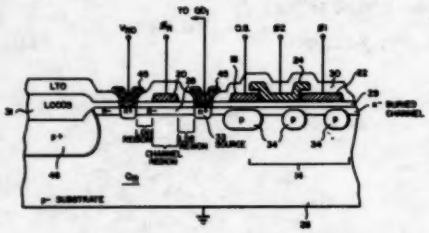
U.S. Cl. 257—229 **30 Claims**

1. An output circuit for sequentially receiving charge and converting such charge collected in photoelements of an image sensor into an output signal which contains noise, said circuit comprising:

a. a first MOS transistor having a gate electrode, a channel region under the gate electrode, and source and drain electrodes, said source electrode having a highly doped region spaced from the channel region and a more lightly doped region between the highly doped region and the

channel region to provide a floating diffusion with reduced capacitance;

b. means for selectively applying pulses to the gate electrode of said first transistor to reset the potential across said floating diffusion and prepare it to receive charge produced in a photoelement; and



c. an output source-follower amplifier having a second transistor, a gate of which is electrically connected to said floating diffusion, whereby said amplifier produces a change in output voltage in response to charge collected in said floating diffusion with an improved signal to noise ratio.

5,192,991

CRYSTALLIZED POLYCRYSTALLINE SEMICONDUCTOR DEVICE

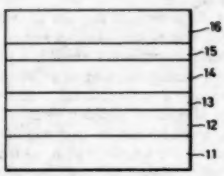
Makoto Hosokawa, Kanagawa, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Filed Sep. 24, 1991, Ser. No. 764,324

Claims priority, application Japan, Sep. 25, 1990, 2-254515

Int. Cl.[5] H01L *27/14*

U.S. Cl. 257—51 **12 Claims**



1. A semiconductor device comprising:

a substrate; and

a polycrystalline semiconductor film provided on said substrate,

wherein said substrate is made from a material having the property of contracting at substantially the same percentage as said semiconductor film, said contraction being caused by thermal treatment for crystallization of said semiconductor film.

5,192,992

BICMOS DEVICE AND MANUFACTURING METHOD THEREOF

Myung S. Kim, Seoul; Jong G. Kim, and Hyun S. Kim, both of Kyungki, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suweon, Rep. of Korea

Filed Nov. 18, 1991, Ser. No. 794,739

Claims priority, application Rep. of Korea, Jun. 27, 1991, 91-10768

Int. Cl.[5] H01L *27/02, 21/265*

U.S. Cl. 257—370 **12 Claims**

1. A BICMOS device comprising:

a first MOS transistor including first conductive-type second and sixth regions formed on a first part of a first conductive-type semiconductor substrate;

second conductive-type source and drain regions formed on said sixth region, separated by a channel region;

a gate including first and second polysilicon layers and a first metal silicide layer, formed on said channel region after growth of a gate oxide, and metal electrodes on said gate, source, and drain regions;

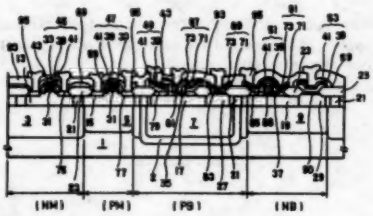
a second MOS transistor formed on second conductive-type third and seventh regions on a second part of said first conductive-type semiconductor substrate, said second MOS transistor having first conductive-type source and drain regions and the same structure as said first MOS transistor;

a vertical first bipolar transistor including first conductive-type fourth and eighth regions formed on a third part of said semiconductor substrate;

a field oxide layer formed on said seventh region;

a first conductive-type collector region formed on one side of said field oxide layer, connected to said fourth region;

a second conductive-type intrinsic base region formed on the other side of said field oxide layer, second conductive-



type extrinsic base regions formed on both sides of said intrinsic base region;

a first conductive-type emitter region formed between said extrinsic base regions;

a base electrode including a second polysilicon layer and a first metal silicide layer, formed on said extrinsic base regions;

emitter and collector electrodes including a third polysilicon layer and a second metal silicide layer, formed respectively on said emitter and collector regions; and

metal electrodes formed on said emitter electrode, said base electrode, and said collector electrode; and

a second bipolar transistor including respective regions formed in second conductive-type fifth and ninth regions on a fourth part of said semiconductor substrate, which are of conductive-type opposite that of said vertical first bipolar transistor;

emitter and collector electrodes including said second polysilicon layer and said first metal silicide layer;

a base electrode including said third polysilicon layer and said second metal silicide layer; and

metal electrodes formed on said emitter electrode, said collector electrode, and said base electrode.

5,192,993

SEMICONDUCTOR DEVICE HAVING IMPROVED ELEMENT ISOLATION AREA

Takashi Arai; Nakafumi Inada, both of Yokohama, and Tsutomu Takahashi, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 380,310, Jul. 17, 1989, abandoned. This application Oct. 23, 1990, Ser. No. 601,342

Claims priority, application Japan, Sep. 27, 1988, 63-241501

Int. Cl.[5] H01L *29/34*

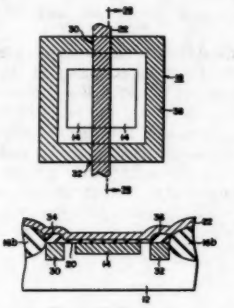
U.S. Cl. 257—400 **6 Claims**

1. An electronic device having a high inversion threshold voltage, comprising:

a substrate of a first conductivity type and a first impurity concentration, having an upper surface portion;

a semiconductor portion of a second conductivity type disposed on the upper surface portion of said substrate, having an exposed surface;

guard ring means disposed on the upper surface portion of said substrate, having an exposed surface, defining an annulus around said semiconductor portion for isolating said semiconductor portion, including a first guard ring portion of said first conductivity type having a second impurity concentration greater than said first impurity concentration, and diametrically opposed second guard ring portions of said first conductivity type having a third impurity concentration greater than said second impurity



concentration for providing the high inversion threshold voltage;

a generally rectangular gate insulating film including a central portion having a first thickness overlaying and in contact with a portion of said exposed surface of said semiconductor portion, and end portions covering and in contact with said exposed surfaces of said diametrically opposed second guard ring portions of said guard ring means, having a second thickness greater than said first thickness; and

an interconnection layer overlaying said gate insulating film, intersecting said second guard ring portions of said guard ring means through said end portions of said gate insulating film.

5,192,994

AU-GE-NI OHMIC CONTACT FOR GA-AL-AS COMPOUND SEMICONDUCTOR

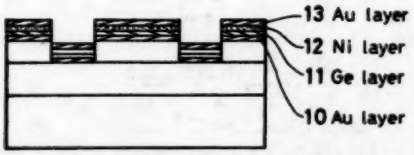
Toshihiko Ibuka, and Masahiro Noguchi, both of Ushiku, Japan, assignors to Mitsubishi Kasei Polytec Co. and Mitsubishi Kasei Corporation, both of Tokyo, Japan

Filed Aug. 28, 1990, Ser. No. 573,756

Claims priority, application Japan, Aug. 30, 1989, 1-225903

Int. Cl.[5] H01L *23/54*

U.S. Cl. 257—766 **7 Claims**



1. An ohmic electrode for a $Ga_{1-x}Al_xAs$ ($0 \leqq x \leqq 1$) compound semiconductor, comprising:

an electrode material comprising Au, Ge and Ni, said electrode material having a first side at an interface between said ohmic electrode and said compound semiconductor and having a second side defining an outer surface of said ohmic electrode;

wherein said electrode material has a Ni content at said first side thereof at said interface between said ohmic electrode and said compound semiconductor of 20 wt % or less.

5,192,995

ELECTRIC DEVICE UTILIZING ANTI-OXIDATION FILM BETWEEN BASE PAD FOR SEMICONDUCTOR CHIP AND ORGANIC ENCAPSULATING MATERIAL

Shunepi Yamazaki, Tokyo; Kazuo Urata, Atsugi; Itaru Koyama, Hatano, and Naoki Hirose, Atsugi, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

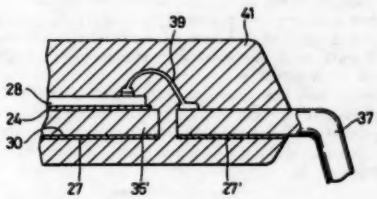
Continuation of Ser. No. 392,581, Aug. 11, 1989, abandoned. This application Feb. 14, 1991, Ser. No. 655,032

Claims priority, application Japan, Aug. 26, 1988, 63-212886

The portion of the term of this patent subsequent to Oct. 15, 2008, has been disclaimed.

Int. Cl.[5] H01L *23/48, 29/44, 29/52, 29/60*

U.S. Cl. 257—787 **4 Claims**



1. An electric device comprising:

a lead frame consisting of at least one lead and a base pad;

a semiconductor chip mounted on a surface of said base pad and electrically coupled with said lead; and

an enclosure made of an organic material enclosing said lead frame and said semiconductor device mounted thereon,

wherein an anti-oxidation film is formed at an interface between said base pad and said organic material.

5,192,996

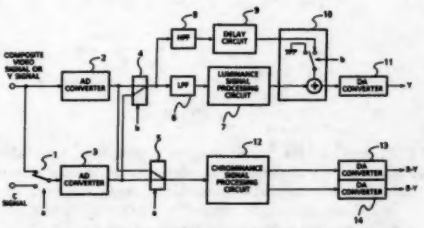
VIDEO CHROMA SIGNAL PROCESSING CIRCUIT

Hirohiko Sakashita, Nara; Tetsuo Kutsuki, Toyonaka, and Naoji Okumura, Minoo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 5, 1991, Ser. No. 788,240

Int. Cl.[5] H04N *9/77*

U.S. Cl. 358—21 R **5 Claims**



1. A video chroma signal processing circuit, comprising:

a first AD converter which receives an analog composite video signal and converts it into a digital code;

a second AD converter which receives said analog composite video signal, converts it into a digital code and per-

forms sampling in a phase reverse to that of said first AD converter;

a multiplexer circuit which receives the output signal of said first AD converter and the output signal of said second AD converter and outputs both output signals alternately at a speed two times as high as that of a sampling clock;

a low-pass filter which receives the output signal of said multiplexer circuit and passes frequencies not higher than one half of the sampling clock;

a luminance signal processing circuit which receives the output signal of said low-pass filter and performs luminance signal processing;

a high-pass filter circuit which receives the output of said multiplexer circuit, operates with a clock two times as high as the sampling clock and passes frequencies not lower than one half of the sampling clock;

a delay circuit which receives the output signal of said high-pass filter circuit and corrects the delay time of the luminance signal processing circuit;

an adding circuit which adds the output signal of said luminance signal processing circuit and the output signal of said delay circuit to each other;

a first DA converter which receives the output signal of said adding circuit and converts it into an analog signal with a clock two times as high as the sampling clock;

a chrominance signal processing circuit which receives the output signal of said first AD converter and converts a chroma signal into primary color signals of an R-Y signal and a b-Y signal; and

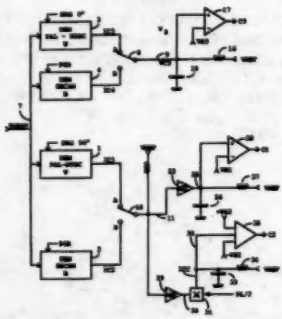
a second DA converter and a third DA converter which receive the output signals of said chrominance signal processing circuit and convert primary color signals of the R-Y signal and the B-Y signal in digital code into analog signals.

5,192,997

AUTOMATIC METHOD FOR IDENTIFYING A COLOR TV STANDARD

Michel Imbert, Seyssins, and Frédéric Lambert, Grenoble, both of France, assignors to SGS-Thomson Microelectronics S.A., Gentilly, France

Filed Feb. 5, 1991, Ser. No. 650,567
Claims priority, application France, Feb. 6, 1990, 90 01623
Int. Cl.[5] H04N *3/27*
U.S. Cl. 358—21 R 3 Claims



1. A method for automatically identifying the PAL or NTSC color TV standard comprising the following steps:

demodulating the chrominance signal bursts with the regenerated sub-carrier, 90'-phased with respect to said bursts, for providing a first demodulation signal;

demodulating the chrominance signal bursts with a signal at the reference frequency of one of the colors of the SECAM standard, for providing a second demodulation signal;

providing a first voltage by integrating in time the first demodulation signal, comparing this first voltage with a first predetermined threshold and providing a first logic criterion being at a first logic state if the first voltage is lower than the first threshold and at the other logic state otherwise; simultaneously applying the first demodulation signal to the input of a polarity inverter switched according to the rate of a non-half line-frequency phased signal, providing a second voltage by integrating in time the output signal of the polarity inverter, comparing the absolute value of the second voltage with a second predetermined threshold and providing a second logic criterion at the first logic state if the absolute value of the second voltage is lower than the second threshold and at the other logic state otherwise;

similarly providing, but from the second demodulation signal, the first logic criterion and the second logic criterion; and

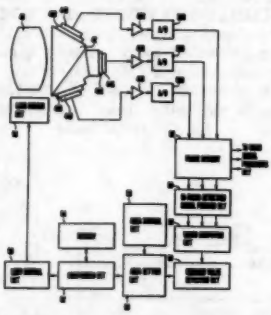
identifying the standard received as being the PAL standard if, from the first demodulation signal, the first and second logic criteria are at said first and the other logic state, respectively, identifying the received standard as being the NTSC standard if, from the first demodulation signal, said first and second logic criteria are both at the first logic state and identifying the received standard as being the SECAM standard if, from the second demodulation signal, said first and second logic criteria are both at the other logic state.

5,192,998

IN-FOCUS DETECTING DEVICE

Jun Tokumitsu, Kanagawa; Minoru Yoshii, Tokyo; Shigeyuki Suda, Kanagawa, and Masayoshi Sekine, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 800,887, Nov. 27, 1991, , which is a continuation of Ser. No. 636,894, Jan. 2, 1991, abandoned. This application Jun. 22, 1992, Ser. No. 902,548
Claims priority, application Japan, Jan. 5, 1990, 2-000257; Jan. 5, 1990, 2-000258
Int. Cl.[5] G02B *7/36;* G03B *3/10;* H04N *5/232, 9/64*
U.S. Cl. 358—41 24 Claims



1. An in-focus detecting device comprising:

a) detecting means for detecting a width of a color transition area of a photographed object on the basis of color components of a video signal obtained from said color transition area; and

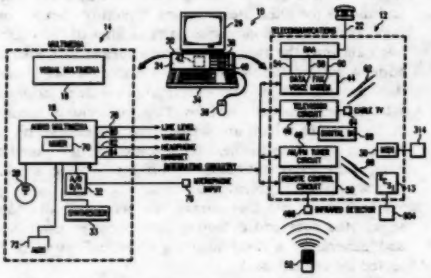
b) in-focus determining means for determining an in-focus state on the basis of an output of said detecting means.

5,192,999

MULTIPURPOSE COMPUTERIZED TELEVISION

Ronald B. Graczyk, Round Rock; James A. Glick, Granite Shoals, and Daniel K. Engberg, Cedar Park, all of Tex., assignors to Compuadd Corporation, Austin, Tex.

Filed Apr. 25, 1991, Ser. No. 691,377
Int. Cl.[5] H04N 7/14, 5/262
U.S. Cl. 358—85 40 Claims



1. A multipurpose computerized television for generating a plurality of video images in association with a personal computer, comprising:

a computer, said computer comprising a computer chassis and a monitor;

a television circuit associated with said computer and within said chassis for receiving a plurality of television signals including broadcast television signals and directing said signals to said monitor for said monitor to display, said monitor operable to display said television signals on any portion of said monitor; and

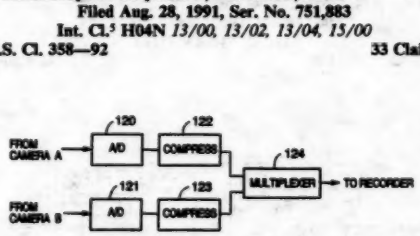
control circuitry associated with said television circuit and said computer within said chassis for controlling the operation of said television circuit through said computer.

5,193,000

MULTIPLEXING TECHNIQUE FOR STEREOSCOPIC VIDEO SYSTEM

Lenny Lipton, Greenbrae; Lawrence D. Meyer, Mill Valley, and Frank K. Kramer, III, Los Gatos, all of Calif., assignors to StereoGraphics Corporation, San Rafael, Calif.

Filed Aug. 28, 1991, Ser. No. 751,883
Int. Cl.[5] H04N 13/00, 13/02, 13/04, 15/00
U.S. Cl. 358—92 33 Claims



1. A method for time multiplexing a first video signal comprising horizontal lines and a second video signal comprising horizontal lines, including the steps of:

horizontally compressing the horizontal lines of the fist video signal to generate first compressed line signals;

horizontally compressing the horizontal lines of the second video signal to generate second compressed line signals; and

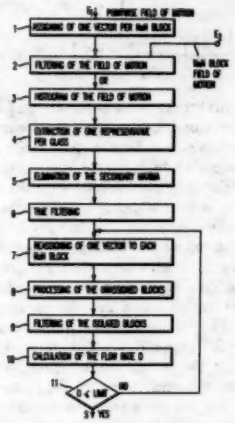
generating a multiplexed video signal comprising multiplexed line signals, wherein each of the multiplexed line signals consist of a first number of sample of one of the first compressed line signals concatenated with said first number of samples of one of the second compressed line signals.

5,193,001

METHOD OF SEGMENTING THE FIELD OF MOTION OF AN IMAGE AND ITS APPLICATION TO THE ENCODING OF VIDEO IMAGES

Michel Kerdranvrat, Rennes, France, assignor to Thomson Consumer Electronics, Courbevoie, France

PCT No. PCT/FR90/00461, § 371 Date Feb. 26, 1991, § 102(e) Date Feb. 26, 1991, PCT Pub. No. WO91/00577, PCT Pub. Date Jan. 10, 1991
PCT Filed Jun. 22, 1990, Ser. No. 655,438
Claims priority, application France, Jun. 27, 1989, 8908547
Int. Cl.[5] H04N 7/18
U.S. Cl. 358—105 12 Claims



1. Method of segmenting the field of motion arising from an estimator of motion delivering, in the form of vectors with two components in the image plane, the displacement of pixels of an image relative to the preceding image, characterized in that it comprises:

a preliminary step of partitioning the image into blocks of n by n pixels and of assigning of a vector of motion chosen for each block from the possible vectors according to a majority criterion;

a step of setting-up of a histogram of the blockwise motion vectors at the termination of which a classifying of the motion vectors encountered is carried out according to their number of occurrences;

a step of reassigning of a motion vector for each of the blocks, the, reassigned vector being chosen from a limited number N of dominant vectors selected from the histogram, and being the vector, from these dominant vectors, closest to the initial vector of the block;

a step of determining isolated blocks which have motion vectors incoherent with those of the blocks of their neighbourhood and filtering the vectors of the isolated blocks having motion vectors incoherent with those of the blocks of their neighbourhood;

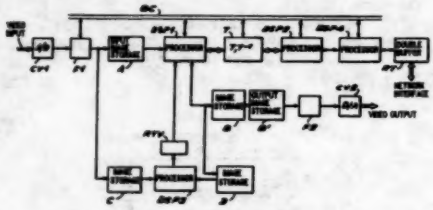
a step of calculating the flow rate necessary for the encoding of the resulting, filtered field of motion, and of verifying that this flow rate is less than or equal to a maximum possible flow rate, the step of reassigning of a motion vector for each of the blocks from a lower number or dominant vectors being taken up again when the flow is greater than the maximum possible flow rate.

5,193,002

APPARATUS FOR THE CODING/DECODING OF IMAGE SIGNALS

Jacques Guichard, Paris, and Gérard Eude, Torcy, both of France, assignors to France Telecom Etablissement Autonome de Droit Public (Centre National d'Etudes des Telecommunications), Issy Les Moulineaux, France

Filed Mar. 25, 1991, Ser. No. 674,142
Claims priority, application France, Mar. 26, 1990, 90 03817
Int. Cl.[5] H04N 7/12
U.S. Cl. 358—133 8 Claims



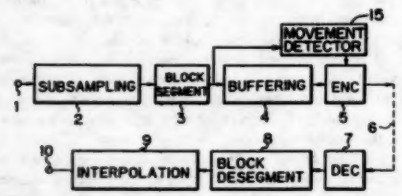
1. An apparatus for the coding-decoding of image signals by prediction transformation having means for coding the image signals to be transmitted and means for receiving and decoding remote image signals which are the transmitted image signals, said image signals being transmitted by means of a transmission network having a given speed, wherein the coding means comprise a coding loop for the images broken down into blocks and which has a coder incorporating transformation (T) and quantization (Q) means for coding the difference between each block of a local image and the corresponding block of a preceding local image and a decoder incorporating reverse transformation (T^{-1}) and reverse quantization (Q^{-1}) means for decoding each image block so as to reconstitute said blocks, so as to subtract the image blocks from image blocks of a following image, wherein the means for receiving and decoding the remote image signals are constituted by the decoder of the local image coding loop, said decoder thus ensuring the decoding of the local image blocks and the decoding of remote image blocks.

5,193,003

APPARATUS FOR DECODING DIGITAL VIDEO DATA WITH SMALL MEMORY REQUIREMENT

Tetsujiro Kondo, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 563,921, Aug. 7, 1990. This application Apr. 15, 1992, Ser. No. 869,898
Claims priority, application Japan, Aug. 15, 1989, 1-210446
Int. Cl.[5] H04N 7/12
U.S. Cl. 358—136 4 Claims



1. In combination, a coding apparatus for coding digital video data in a block format allowing compression of the video data representing a two dimensional group of picture elements belonging to a plurality of frames, the coding apparatus comprising:

sub-sampling means for sub-sampling picture elements in predetermined positions in each of a succession of frames, the phase being inverted between two continuous frames, to reduce the number of picture elements in each of the frames, thereby producing lines of thinned-out data with n picture element data in each line;

block segmentation means for arranging the picture elements of the thinned out data in time-sequential blocks, the block segmentation means including a two-line memory means and means for alternately writing n picture element data from each one of continuous pairs of lines of the thinned out data into the two-line memory means in a memory address pattern such that two successive picture element data are written in two contiguous memory addresses which are then followed by two contiguous memory addresses into which are written two successive picture element data from the next succeeding line of thinned out data, and reading out the data from the two-line memory means as block segmented data;

movement discriminating means for receiving the block segmented data and detecting movement in each block and generating a discriminating code indicative of detected movement; and

encoding the block segmented data and transmitting the discriminating code and the encoded block segmented data; and further including

a decoding apparatus comprising:

decoding means for receiving the encoded block segmented data and the discriminating code and decoding the encoded data to generate decoded block segmented data;

block desegmentation means connected to the decoding means for converting the decoded block segmented data into scanning picture element data;

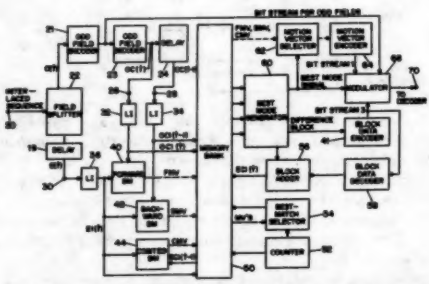
adaptive interpolation means connected to the block desegmentation means and supplied with the scanning picture element data, for performing spatial interpolation of the scanning picture element data, in accordance with the discriminating code, to reconstitute the original digital video data.

5,193,004

SYSTEMS AND METHODS FOR CODING EVEN FIELDS OF INTERLACED VIDEO SEQUENCES

Feng Ming Wang, and Dimitris Anastassiou, both of New York, N.Y., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Filed Dec. 3, 1990, Ser. No. 621,343
Int. Cl.[5] H04N 7/133
U.S. Cl. 358—136 45 Claims



1. A system, for multi-mode predictive interpolative coding of fields of video, comprising:

input means for coupling current and later fields of inter-

laced data, such fields including even fields having pixel data for line positions at which pixel data is omitted in prior and later odd fields;

separator means, coupled to said input means, for separating said even fields of data from said odd fields of data;

delayed coupling means, coupled to said separation means to receive odd fields of data, for providing past odd field data;

storage means for storing data and for providing past even field data from storage;

interpolation means, coupled to said separation means and delayed coupling means to receive current even, future odd and past odd fields of data, for deriving and coupling to said storage means enhanced fields of data corresponding to each of said fields of data and having estimated pixel data at omitted line positions;

block matching means, coupled to said interpolation means and storage means, for comparing said current even enhanced field data with each of said future odd and past odd enhanced fields and said past even field data to develop motion vector signals indicative of location of best matched blocks of future odd, past odd and past even data, and for coupling said motion-vector signals to said storage means;

comparator means, coupled to said storage means, for utilizing blocks of pixel data retrieved from said storage means in response to said motion vector signals for performing a plurality of mode comparisons of a block of current even pixel data with different ones of said best matched blocks alone or on an averaged basis for deriving a best mode signal representative of a single best mode block having the least error and deriving pixel error signals representing pixel by pixel errors in said bets mode block; and

output means, coupled to said comparator means and separator means, for providing said pixel error signals, best matched block location signals based on motion vector signals corresponding to said best mode signal, and odd field pixel data signals for transmission for use by a decoder.

5,193,005

CHANNEL SELECTING APPARATUS HAVING A CHANNEL SKIP FUNCTION

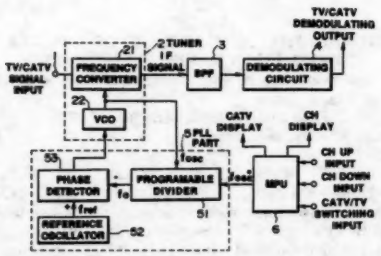
Shigeru Tomita, Gunma, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 517,655, May 1, 1990, abandoned. This application Apr. 6, 1992, Ser. No. 863,533

Claims priority, application Japan, May 1, 1989, 1-112894

Int. Cl.[5] H04N *5/50*

U.S. Cl. 358—191.1 **16 Claims**



4. A channel selecting apparatus comprising:

tuner means for mixing an input high frequency signal with a local oscillation signal controlled by a tuning voltage to provide an intermediate frequency signal representing a desired channel;

AFT detecting means for detecting a difference between a prescribed frequency and a frequency of the intermediate frequency signal when a frequency of the local oscillation signal is one of increased or decreased, the AFT detecting means outputting the difference as an AFT voltage;

controlling means for performing, in accordance with a channel-up or channel-down channel selecting operation, the functions of:

outputting data corresponding to local oscillation frequencies of the desired respective channels, said data corresponding to the local oscillation frequencies being output in accordance with the AFT voltage from the AFT detecting means,

preparing a tuning voltage in accordance with the data corresponding to the local oscillation frequencies,

controlling the local oscillation signal of the tuner means,

storing common channel selection inhibiting information indicating whether the controlling means is inhibited or permitted to select the respective desired channels at the time of a channel-up or channel-down channel selection, the common channel selection inhibiting information identifying a plurality of channels not allowed to exist simultaneously, and

searching a frequency of a video carrier to determine a difference between the frequency of the video carrier and a frequency of a sound carrier of a lower adjacent channel and a difference between the video carrier frequency and a frequency of a color sub-carrier of a lower adjacent channel to determine whether the AFT voltage coincides with one of the sound carrier and the color sub-carrier and to determine whether the AFT voltage coincides with the video carrier, when the AFT coincides with one of the sound carrier and color sub-carrier, the video carrier is searched again until the AFT voltage is determined to coincide with the video carrier thereby identifying a frequency of the desired channel.

5,193,006

VIDEO DISPLAY APPARATUS FOR PICTURES WITH DIFFERENT ASPECT RATIOS

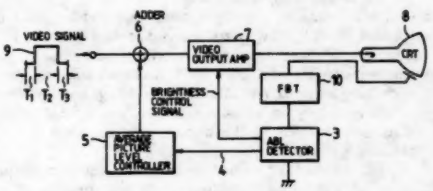
Eiichi Yamazaki, Ichihara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 26, 1989, Ser. No. 301,461

Claims priority, application Japan, Jan. 29, 1988, 63-17002; Jan. 29, 1988, 63-17003; Jan. 29, 1988, 63-17004

Int. Cl.[5] H04N *5/08, 7/08*

U.S. Cl. 358—242 **2 Claims**



1. A video display apparatus for displaying pictures with different aspect ratios, comprising:

means for receiving a first video signal and a second video signal, the first and second video signals having different aspect ratios;

a picture display section for displaying a picture produced by one of the first and second video signals on a screen having fluorescent materials thereon; and

means for illuminating blank portions on the screen where no picture is displayed at a brightness level substantially equal to a picture mean luminance of a picture display portion when the second video signal is displayed on the display section, the blank portions being produced because of the difference in aspect ratio between the first and second video signals;

wherein the illuminating means includes means for continu-

ously detecting a high-voltage mean current for driving the screen, and means responsive to the detecting means for obtaining a respective mean value of the continuously detected high-voltage mean current and for illuminating the blank portions at the brightness level substantially equal to the picture mean luminance in accordance with the mean value when the second video signal is displayed on the display section, the first video signal being a high-quality TV signal and the second video signal being a standard TV signal.

5,193,007

THERMAL TRANSFER RECORDING APPARATUS AND METHOD OF USE WITH PARTICULAR RELATIONSHIP BETWEEN RELATIVE CONVEYANCE DIRECTION, LENGTH, AND VELOCITY OF THE INK SHEET, RECORDING MEDIUM, AND IMAGE RECORDING

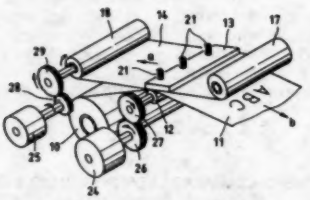
Minoru Yokoyama; Takashi Awai; Akihiro Tomoda, all of Yokohama; Yasushi Ishida, Tokyo; Hisao Terajima; Takeshi Ono, both of Yokohama; Takehiro Yoshida, Tokyo; Satoshi Wada, Kawasaki, and Makoto Kobayashi, Iama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 20, 1989, Ser. No. 409,777

Claims priority, application Japan, Sep. 22, 1988, 63-236365

Int. Cl.[5] H04N *1/23;* **G01D** *15/10;* **B41J** *2/325, 33/36, 33/40*

U.S. Cl. 358—296 **31 Claims**



1. A thermal transfer recording apparatus for transferring ink of an ink sheet to a recording medium to thereby effect recording of an image on said recording medium, having:

an ink sheet loading portion for loading the ink sheet;

a recording medium loading portion for loading the recording medium;

recording means for acting on said ink sheet loaded into said ink sheet loading portion to effect recording of an image on said recording medium; and

conveying means for conveying said ink sheet loaded into said ink sheet loading portion in a direction opposite to a conveyance direction of said recording medium,

wherein recording of n lines is effected with said ink sheet remaining stopped, and after the recording, said ink sheet is conveyed by an amount smaller than n lines in the direction opposite to the conveyance direction of said recording medium.

5. A thermal transfer recording apparatus for transferring ink of an ink sheet to a recording medium to thereby effect recording an image on said recording medium, said apparatus comprising:

a recording medium loading portion into which said recording medium is loaded;

an ink sheet recording medium loading portion into which said ink sheet is loaded;

recording means for acting on said ink sheet and effecting recording said image on said recording medium;

conveying means for said ink sheet and said recording medium so that a direction of recording said image on said recording medium is consistent with a direction of conveying said ink sheet; and

control means for causing said conveying means to convey said ink sheet and said recording medium by a same length to record said image of a predetermined length and control said conveying means to rewind said ink sheet by a length shorter than said predetermined length after recording by said predetermined length.

5,193,008

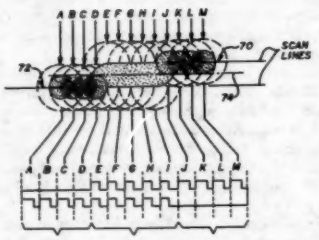
INTERLEAVING VERTICAL PIXELS IN RASTER-BASED LASER PRINTERS

Allen L. Frazier, Derby, and James S. Pierson, Augusta, both of Kans., assignors to DP-Tek, Inc., Wichita, Kans.

Filed Nov. 7, 1990, Ser. No. 610,094

Int. Cl.[5] H04N *1/21*

U.S. Cl. 358—298 **22 Claims**



7. In a raster based laser beam imaging system having a predetermined normal DPI (dots per inch) resolution, and having a single laser beam making horizontal sweeps corresponding to said resolution, and using imaging materials having a predetermined threshold level, the improvement comprising:

means for energizing the laser beam at a rate to provide a higher number of dots per inch in the horizontal scan direction than said predetermined DPI;

means for selectively creating predetermined, interleaved dots located at points between the horizontal scan lines of the laser beam by energizing said laser beam at two points on said scan lines directly above and below each predetermined desired interleaved dot, with the energization at one or both of said additional points on said scan lines being selectively below said threshold level, but with the cumulative energization at the interleaved predetermined point being greater than said threshold level so that dots appear at the predetermined interleaved points;

said apparatus including means for producing a complete image at a higher resolution than said predetermined normal DPI with a single pass of said laser beam; and

said apparatus including means for producing a laser beam which extends more than half way between adjacent scan lines.

5,193,009

SIGNAL SWITCHING METHOD OF A TV-VCR COMBINATION HAVING TWO TUNERS

Keun Park, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Jan. 19, 1990, Ser. No. 467,374

Claims priority, application Rep. of Korea, Jan. 20, 1989, 661/1989

Int. Cl.[5] H04N *5/782*

U.S. Cl. 358—335 **7 Claims**

1. A signal switching method of a TV/VCR combination having two tuners which comprises the steps of:

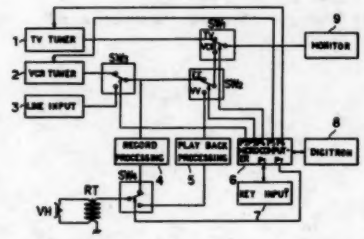
(a) scanning the state of a key input unit by a microcomputer to display on display means the state of the key input unit and to simultaneously control a TV tuner and a VCR tuner by respective tuner control signals generated by the microcomputer in accordance with the state of the key input unit;

(b) controlling a recording/playback shifting switch with a recording/playback control signal generated by the microcomputer, to selectively couple a video head through a

rotary transformer to one of a record processing unit and a playback processing unit;

(c) controlling a VCR tuner/line input shifting switch with a VCR tuner/line input control signal generated by the microcomputer to select one of output signals of the VCR tuner and the line input and to apply the selected output signals to the record processing unit;

(d) controlling a VCR-line/playback shifting switch with a



VCR-line/playback control signal generated by the microcomputer to select one of output signals of the VCR tuner/line input shifting switch and the playback processing unit; and

(e) controlling a TV/VCR shifting switch with a TV/VCR control signal generated by the microcomputer to select one of output signals of the TV tuner and the VCR-line/-playback shifting switch and to apply the selected output signals of the TV/VCR shifting switch to a monitor.

5,193,010

DIGITAL VIDEO SIGNAL RECORDING AND REPRODUCING APPARATUS HAVING AN ERROR CONCEALMENT CONTROL FUNCTION

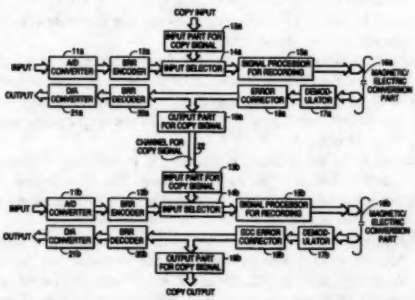
Tatsuro Juri, Osaka; Chiyoko Matsumi, Suita; Shinya Kadono, Hirakata, and Hideki Ohtaka, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 28, 1990, Ser. No. 574,288

Claims priority, application Japan, Aug. 29, 1989, 1-221978; Jun. 29, 1990, 2-173429

Int. Cl.[5] H04N *5/94, 5/78*

U.S. Cl. 358—336 **30 Claims**



1. A digital video signal recording and reproducing apparatus comprising:

an encoding means for subjecting an input digital video signal to a bit rate reduction encoding to obtain a first bit rate reduction encoded video signal;

a copy input means for inputting as a copy input signal a second bit rate reduction encoded video signal supplied from outside of said apparatus;

a selection means for selectively outputting either said first bit rate reduction encoded video signal or said second bit rate reduction encoded video signal;

a recording signal processing means including a modulation means for modulating a selected bit rate reduction encoded video signal from said selection means to obtain a modulated video signal;

a recording and reproducing means for recording the modulated video signal from said recording signal processing means on a recording medium and for reproducing the recorded signal from said recording medium to obtain a reproduced modulated video signal;

a demodulation means for demodulating the reproduced modulated signal to obtain a reproduced bit rate reduction encoded signal;

an error correcting and concealing means for detecting errors of the reproduced bit rate reduction encoded signal which contain correctable errors and uncorrectable errors, said error correcting and concealing means correcting said correctable errors and concealing said uncorrectable errors to obtain an encoded video signal in which the errors have been corrected or concealed;

a copy output means for outputting the encoded video signal obtained from said error correcting and concealing means as a copy output signal; and

a decoding means for decoding the encoded video signal obtained from said error correcting and concealing means to obtain a reproduced digital video signal.

5,193,011

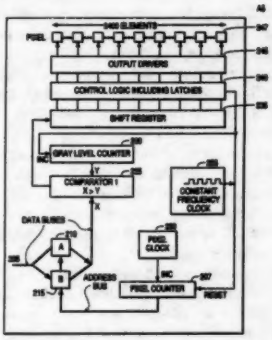
METHOD AND APPARATUS FOR PRODUCING VARIABLE WIDTH PULSES TO PRODUCE AN IMAGE HAVING GRAY LEVELS

Gary A. Dir, Fairport; Fred W. Schmidlin, Pittsford; John D. Sotack, Rochester, and Joseph F. Stephany, Williamson, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 3, 1990, Ser. No. 592,468

Int. Cl.[5] H04N *1/23*

U.S. Cl. 358—455 **29 Claims**



1. A gray level reproduction system having a plurality of reproduction elements comprising:

first storing means for storing a plurality of gray level codes, each code corresponding to an area in a row to be printed;

addressing means for addressing each gray level code in the first storing means;

first clocking means, including means for generating a series of edges having a variable time difference between adjacent edges;

first counting means, coupled to the first clocking means, for counting gray levels;

first comparing means, coupled to the first storing means and to the first counting means for comparing a gray level read from the first storing means to the current gray level

count generated by the first counting means including means for generating an output indicating equality;

means, coupled to the first comparing means, for accessing each reproduction element; and

means for incrementing the first counting means after the addressing means has addressed a plurality of gray level codes in the first storing means.

5,193,012

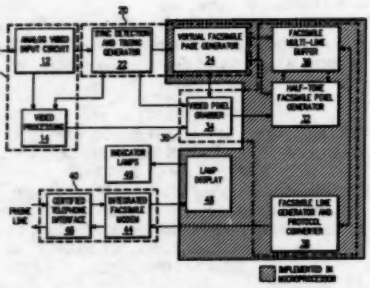
REAL-TIME CONVERSION OF STILL-VIDEO TO HALF-TONE FOR HARD COPY OUTPUT (SUCH AS ON A FACSIMILE MACHINE)

Jonathan E. Schmidt, San Antonio, Tex., assignor to Snap-Fax Corporation, Dallas, Tex.

Filed Apr. 29, 1991, Ser. No. 693,444

Int. Cl.[5] B41J *3/02*

U.S. Cl. 358—456 **27 Claims**



21. A method of real-time still-video conversion for converting a still-video image frame captured by a still-video source into a half-tone facsimile reproduction produced by a conventional facsimile machine without requiring the creation or storage of an intermediate image frame, comprising the steps:

for each still-video image frame, receiving repeated transmissions of the still-video image frame from the still-video source until conversion is complete;

for each transmission of the still-video image frame, synchronizing the frame to a virtual facsimile page that defines a matrix of virtual facsimile pixels, with each virtual facsimile pixel being associated with a corresponding image pixel of the still-video frame which is characterized by an amplitude value;

the virtual facsimile page being formed by a predetermined number of virtual facsimile lines each with a predetermined number of half-tone dot positions, such that each virtual facsimile pixel is defined by a predetermined number of adjacent half-tone dot positions on a predetermined number of adjacent virtual facsimile lines, thereby forming a half-tone dot-matrix;

in successive still-video image frames, converting successive blocks of image pixels into a corresponding line of half-tone pixels, each line of half-tone pixels being formed by corresponding virtual facsimile lines, and each half-tone pixel having an appropriate half-tone dot pattern;

buffering the virtual facsimile lines associated with at least one line of half-tone pixels; and then

transmitting the buffered virtual facsimile lines to the facsimile machine for producing a half-tone facsimile output;

repeating this conversion process until the still-video image frame is completely converted into a half-tone facsimile reproduction.

5,193,013

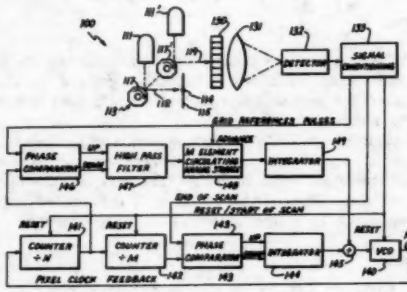
SCANNER WITH NON-LINEARITY COMPENSATING PIXEL CLOCK

Melvin E. Swanberg, Claremont, Calif., assignor to Olive Tree Technology, Inc., San Marino, Calif.

Filed May 29, 1990, Ser. No. 529,959

Int. Cl.[5] H04N *1/04*

U.S. Cl. 358—481 **25 Claims**



1. A scanner system, comprising:

means defining a light source for producing a light beam;

scanning means for directing the light beam to a spot on a surface to be scanned that is located at a predetermined location relative to the scanning means and for moving the spot across the surface along a scan line of predetermined length in a series of scan cycles;

means defining a reference clock for producing a train of M reference pulses during each of the scan cycles such that each of the M reference pulses represents the occurrence of a respective one of M segments of the scan cycle, where M is an integer;

means defining a first oscillator for producing a train of clock pulses for use in controlling the light beam at a predetermined number of desired pixel positions along the scan line; and,

frequency control means responsive to the reference pulses for varying the rate of change of the frequency of the first oscillator during the occurrence of each of the M segments of the scan cycle and forcing phase coincidence with the reference pulses that define each of the M segments of the scan cycle in order to approximate an ideal frequency variation curve over the entire scan cycle,

the frequency control means further including means defining an analog storage circuit for storing M analog error signals, each of which M error signals corresponds to a respective one the M segments of the scan cycle, and for switching to each of the M stored error signals as the respective one of the M segments of the scan cycle occurs.

5,193,014

METAL VESSEL HAVING HOLOGRAM OF DIFFRACTION GRATING FORMED THEREON

Ken Takenouchi; Kazuyuki Kurosawa, both of Yokohama; Makoto Horiguchi, Fujisawa; Tsuneo Imatani, and Hideo Kurashima, both of Yokosuka, all of Japan, assignors to Toyo Seikan Kaisha Ltd., Tokyo, Japan

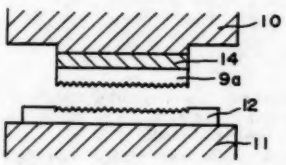
PCT No. PCT/JP90/01548, § 371 Date Aug. 29, 1991, § 102(e) Date Aug. 29, 1991, PCT Pub. No. WO91/08525, PCT Pub. Date Jun. 13, 1991

PCT Filed Nov. 28, 1990, Ser. No. 721,581

Claims priority, application Japan, Nov. 28, 1989, 1-306670; Dec. 28, 1989, 1-338639

Int. Cl.[5] G03H *1/04*

U.S. Cl. 359—3 11 Claims



1. A process for the preparation of a metal vessel with a hologram or a diffraction grating, which comprises

preparing a metal plate mold having a concave-convex hologram or a diffraction grating formed on a gently curved face convex to the surface, wherein the ratio (P/D) of the diameter (D) of the curved surface to the protrusion height (P) is from 1.0×10^{-5} to 5.0×10^{-2} and

stamping a metal blank or a metal container having a smooth surface with the metal plate mold at room temperature to transfer a relief type hologram or a relief type diffraction grating on the surface of the metal blank or the metal container by plastic deformation of the metal blank or the metal container.

5,193,015

CHOLESTERIC LIQUID CRYSTAL SCREEN WHICH REFLECTS SUBSTANTIALLY ALL OF THE PROJECTED LIGHT

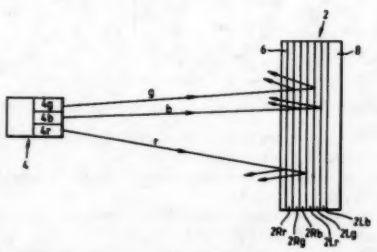
Ian A. Shanks, Buckinghamshire, England, assignor to Thorn EMI plc, London, England

Filed Oct. 5, 1990, Ser. No. 593,215

Claims priority, application United Kingdom, Oct. 5, 1989, 8922415

Int. Cl.[5] G02F *1/133, 1/1335;* G03B *21/56, 21/32*

U.S. Cl. 359—53 3 Claims



1. A diffusely reflective screen for use in front projection system, which screen receives light projected thereon from said front projection system and comprises a plurality of cholesteric liquid crystal material members each possessing a defined pitch of liquid crystal material having a respective wavelength reflection characteristic, such that each member reflects light within a wavelength range defined by said respective reflection characteristic and transmits light outside said wavelength range, each of which members reflects less light of wavelengths outside each respective wavelength range; and an optical absorber suitable for absorbing light not reflected by said plurality of members whereby substantially all of said light from said front projection system which is within each wavelength range is reflected by said members.

5,193,016

NON-LINEAR DEVICE FOR AMPLIFYING THE INTENSITIES OF LIGHT RAYS THAT PRODUCE AN IMAGE

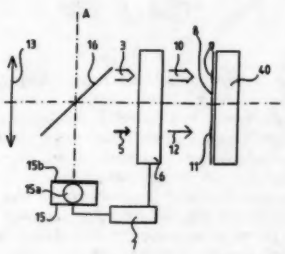
Georges Cornuejols, Montferrier, France, assignor to Scanera S.G., France

Continuation of Ser. No. 500,740, Mar. 28, 1990, abandoned. This application Oct. 10, 1991, Ser. No. 773,774

Claims priority, application France, Mar. 28, 1989, 89 04333; Nov. 30, 1989, 89 16149

Int. Cl.[5] G02F *1/33, 1/335, 1/35*

U.S. Cl. 359—53 26 Claims



3. A device for non-linearly amplifying the intensity of light rays, which comprises:

a flat photosensitive optical component;

an objective lens for directing initial light rays of an image of a scene onto the flat photosensitive optical component, the flat photosensitive optical component being positioned near the focal plane of the objective lens and the initial light rays passing through the flat photosensitive optical component and becoming final light rays having the same direction as the corresponding initial light rays;

a sensor for sensing the average intensity of the initial light rays and for generating a first electrical signal representative of said average intensity;

an electrical circuit connected to the flat photosensitive optical component and responsive to the first electrical signal from the sensor for applying a second electrical signal to said flat photosensitive optical component which is a function of the average intensity of the initial light rays;

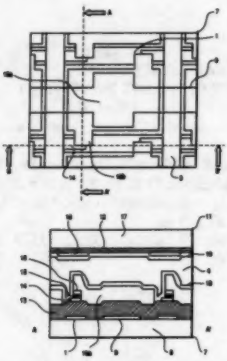
the flat photosensitive optical component having a transparency that varies point by point in accordance with the intensities of the initial light rays striking that point and with said second electrical signal, such that the intensities of the final light rays are the products of the intensities of the corresponding initial light rays and the transparencies of each point on the flat photosensitive optical component where the initial light rays strike the flat photosensitive optical component, the ratios of the intensities of the final light rays differing from those of the intensities of the corresponding initial light rays.

5,193,017

REFLECTIVE-TYPE ACTIVE MATRIX LIQUID CRYSTAL DISPLAY DEVICE

Hiroshi Iwai, Hirakata; Yoneharu Takubo, Toyonaka, and Sadayoshi Hotta, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 8, 1991, Ser. No. 638,536
Claims priority, application Japan, Jan. 11, 1990, 2-4163
Int. Cl.[5] G02F *1/133*
U.S. Cl. 359—59 **5 Claims**



1. An active matrix liquid crystal display device comprising:
a first substrate having formed thereon an array of thin film transistors formed in a matrix, a plurality of parallel gate buses each having a constant width, a plurality of source buses each having a constant width and perpendicular to the gate buses, and an array of pixel electrodes formed in a matrix and driven by the array of thin film transistors;
a second substrate opposing the first substrate and having formed thereon a transparent common electrode opposing the array of pixel electrodes; and
a liquid crystal layer sandwiched between the first and second substrates;
wherein each of the thin film transistors comprises:
a gate bus formed on an insulating substrate and having a constant width and no projection not extended shape;
a gate insulating layer formed on the gate bus;
a semiconductors layer formed on the gate insulating layer in a portion above the gate bus, the semiconductor layer being elongated in a longitudinal direction of the gate bus and having a constant width which is smaller than the width of the gate bus;
a conductive material layer patterned into a first part constituting a source bus having a constant width and no projection nor extended shape and disposed on a part of the semiconductor layer and the gate insulating layer, a second part separated from the first part and constituting a drain electrode disposed an another part of the semiconductor layer, and a third part continuous from the second part and constituting a pixel electrode disposed on the gate insulating layer.

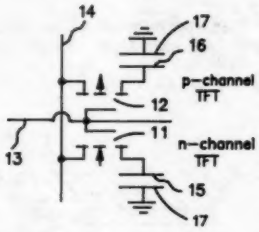
5,193,018

ACTIVE MATRIX LIQUID CRYSTAL DISPLAY SYSTEM USING COMPLEMENTARY THIN FILM TRANSISTORS

Biing-Seng Wu, Hsin-Chu, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Oct. 28, 1991, Ser. No. 783,575
Int. Cl.[5] G02F *1/13*
U.S. Cl. 359—59 **16 Claims**

1. A thin film transistor active matrix display system comprising:
a plurality of liquid crystal display picture elements arranged in rows and columns and divided into groups;
each said group of said pixels containing two said pixels,
a plurality of scan lines;
a plurality of data lines;
each said group addressed by the same scan line and the same data line,



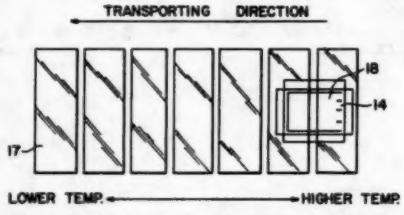
two switches for connecting said pixels of one of said group with said data line, each one of said switches connected only to one of said pixels,
a n-channel thin film transistor (TFT) serving as one of said switches,
a p-channel TFT serving as another one of said switches,
said two TFTs having common gates connected to said scan line, common drains connected to said data line, and separate sources connected two said pixels in the same group.

5,193,019

METHOD OF MANUFACTURING LIQUID CRYSTAL DEVICES

Toshio Watanabe, Atsugi, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 466,961, Jan. 18, 1990, abandoned, which is a division of Ser. No. 254,096, Oct. 6, 1988, Pat. No. 4,917,473. This application May 22, 1991, Ser. No. 704,022
Claims priority, application Japan, Oct. 13, 1987, 62-257899; Oct. 13, 1987, 62-257900
The portion of the term of this patent subsequent to Apr. 17, 2007, has been disclaimed.
Int. Cl.[5] G02F *1/1335, 1/1339, 1/137*
U.S. Cl. 359—62 **3 Claims**



1. A method of disposing a liquid crystal material between a pair of substrates comprising:
forming an electrode arrangement on the inside surfaces of said pair of substrates;
coating an orientation control film on the inside surface of at least one of said substrates;
giving orientation treatment to said orientation control film;
mating said pair of substrates with an inner space therebetween;
sealing the periphery of the mated substrates except for at least one inlet port;
placing the sealed substrates in a vacuum chamber;
descending the pressure in said vacuum chamber;

pouring said liquid crystal material into said inlet port such that said liquid crystal material is kept in its nematic or isotropic phase;

elevating the pressure in said vacuum chamber in order to introduce said liquid crystal material into said inner space;

descending the temperature of said liquid crystal material between said substrates below a temperature at which said liquid crystal material is driven;

sealing off said inlet port in order to avoid loss of said liquid crystal material contained in the inner space, said sealing occurring while said liquid crystal is substantially at the descended temperature; and

removing the remaining portion of said liquid crystal material from the vicinity of said inlet port.

5,193,020

METHOD FOR PRODUCING COMPENSATOR FOR LIQUID CRYSTAL DISPLAY

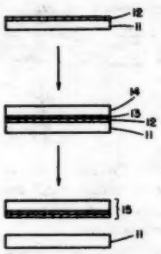
Iwane Shiozaki; Takehiro Toyooka, both of Yokohama, and Shigeki Iida, Kawasaki, all of Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

Filed Jun. 26, 1991, Ser. No. 721,174

Claims priority, application Japan, Jun. 27, 1990, 2-166833

Int. Cl.[5] G02F *1/1335, 1/13;* C09K *19/52*

U.S. Cl. 359—73 **5 Claims**



5. A method for producing a compensator for a liquid crystal display comprising forming a liquid crystal polymer layer, said polymer layer exhibiting twisted nematic orientation in the state of liquid crystallinity and a glassy state at temperatures below the liquid crystal transition point thereof, on an orienting base; and transferring said liquid crystalline polymer layer onto a light transmitting base.

5,193,021

FILM SPACER AND METHOD FOR FABRICATING LIQUID CRYSTAL CELL USING THE SAME

Byunghee Kim, Seoul, Rep. of Korea, assignor to Samsung Electron Device Co., Ltd., Kyunggi-Do, Rep. of Korea

Filed Oct. 21, 1991, Ser. No. 781,088

Claims priority, application Rep. of Korea, Dec. 22, 1990, 90-21553

Int. Cl.[5] G02F *1/1339, 1/1335*

U.S. Cl. 359—81 **11 Claims**

1. A film spacer for a liquid crystal display element comprising:

a PET sheet with one end having a blank area and through which a plurality of incised lines are formed at intervals, the lines starting at the blank area and extending to the other end of the sheet; and

a cover layer on one side of the sheet, the cover layer being fixed to the blank area, wherein the incised lines form the film spacer into a plurality of spacers arranged in strip form.

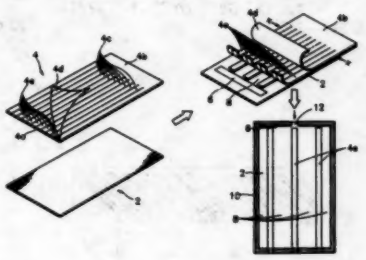
3. A method of fabricating a liquid crystal cell comprising the steps of:

a) providing a spacer sheet and cutting a plurality of slices through the sheet, the slices having first and second ends, the second ends extending to one edge of the sheet;

b) putting a cover over one side of the sheet;

c) supporting another side of the sheet on a first glass panel;

d) cutting the sheet such that the first ends of the slices are aligned with an edge of the first glass panel, thereby forming the sheet into separate strips defined by the slices;



e) removing the cover and at least one of the separate strips to leave predetermined ones of the separate strips; and

f) completing the cell by sealing a second glass panel to the first glass panel with the predetermined strips inbetween, and infusing liquid crystal.

5,193,022

PLANE-TYPE DISPLAY APPARATUS

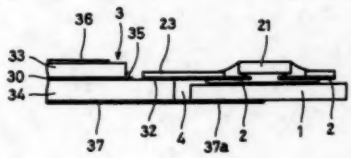
Minoru Hirai, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Feb. 25, 1992, Ser. No. 841,165

Claims priority, application Japan, Feb. 26, 1991, 3-030544; Feb. 26, 1991, 3-030548

Int. Cl.[5] G02F *1/13*

U.S. Cl. 359—88 **3 Claims**



1. A display apparatus comprising:

a display panel;

a drive signal supplying board arranged opposite to said display panel at a predetermined space therefrom for supplying a drive signal for the display panel;

a drive integrated circuit device mounted on the board through a flexible plate and connected to a connecting portion of said display panel through the flexible plate;

a first polarizing plate arranged on the upper surface of said display panel; and

a second polarizing plate arranged to the under surface of said display panel and extending to the under surface of said drive signal supplying board to be fixed thereto.

5,193,023

METHOD OF CONTROLLING THE DOMAIN OF A NONLINEAR FERROELECTRIC OPTICS SUBSTRATE

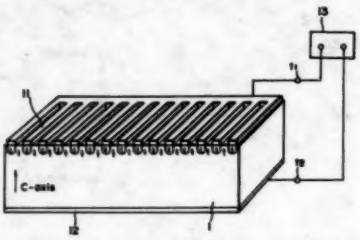
Masahiro Yamada, Miyagi, and Koichiro Kishima, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 553,395, Jul. 17, 1990, abandoned. This application Jul. 15, 1991, Ser. No. 729,897

Claims priority, application Japan, Jul. 17, 1989, 1-184362; Jul. 17, 1989, 1-184364; Dec. 28, 1989, 1-344270; May 15, 1990, 2-124786

Int. Cl.[5] G02F *1/03;* G11C *11/22*

U.S. Cl. 359—245 22 Claims



1. A method of controlling the domain of a nonlinear ferroelectric optics substrate, comprising:

forming a first electrode and a second electrode opposite to each other respectively on the opposite major surfaces of a single-domain nonlinear ferroelectric optics substrate, at least either the first electrode or the second electrode being formed in a given electrode pattern; and

applying a given dc voltage across the first and second electrodes to form local continuously alternating inverted domains in a pattern corresponding to the electrode pattern where the local inverted domains alternately have a constant, opposite, polarization direction.

5,193,024

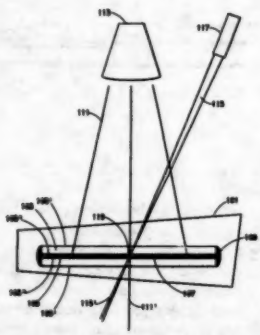
LIQUID/VAPOR OPTICAL MODULATOR

John A. Lawton, Landenberg, Pa.; Evan D. Laganis, Wilmington, and James L. Holman, Jr., Newark, both of Del., assignors to E. I du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 31, 1990, Ser. No. 606,364

Int. Cl.[5] G02F *1/03, 26/00*

U.S. Cl. 359—253 17 Claims



1. A method of modulating image radiation comprising the steps of:

a) containing a dye solution in a cell, said dye solution comprising a solvent and at least one dye capable of absorbing radiation from a heat-beam and converting energy from said heat-beam to heat;

b) illuminating said cell and said dye solution with illumination radiation having a wavelength, said solution being adaptable to substantially block said wavelength of said radiation; and

c) intersecting a region of said dye solution with said heat-beam, thereby forming a bubble within said region of said solution, allowing at least part of said illumination radiation of said wavelength to pass through said bubble and said cell, thereby modulating said image radiation.

5,193,025

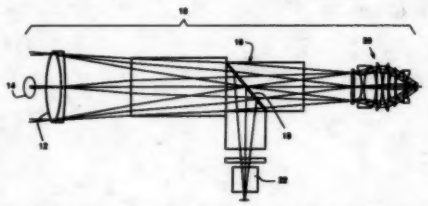
OPTICAL VIEWING AND NEAR INFRARED TRACKING SYSTEM FOR A PORTABLE MISSLE LAUNCHER

James J. Carlson, Woodland Hills, and Gary R. Noyes, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jan. 21, 1992, Ser. No. 823,413

Int. Cl.[5] G02B *1/10, 5/28, 13/14*

U.S. Cl. 359—356 4 Claims



3. A prism assembly for use in the optical apparatus of a missile launcher for directing visual and near infrared light energy components along first and second substantially different angular paths, comprising:

first and second prisms with a single flat surface of each arranged facing one another;

a plurality of layers stacked between the facing flat surfaces of the prisms, said layers forming an interference coating allowing impinging visual electromagnetic energy to pass through the coating while reflecting near infrared components away from the coating,

an outer layer of the coating being constructed of MgF_2 having a 0.78 wavelength thickness, and the remaining layers in the coating being formed from a plurality of three-layer elements, each element including a pair of 0.5 wavelength layers sandwiched about a 1.0 wavelength layer of ZnS.

5,193,026

REFLECTIVE SAFETY STRIPES

Edward Purvis, 1714 17th St. East, Bradenton, Fla. 34208, and George Spector, 233 Broadway Rm 3815, New York, N.Y. 10007

Filed Sep. 30, 1991, Ser. No. 767,632

Int. Cl.[5] G02B *5/12*

U.S. Cl. 359—516 1 Claim

1. A reflective safety device which comprises an article made of light reflecting material worn on a person at night, so that the person can be seen by the lights of a motor vehicle to prevent accidents, wherein said article of light reflecting material is a C-shaped band having tapered ends, being of a bright color and which can be worn on a head of the person, on an arm, wrist, leg or ankle of a garment worn by the person, and wherein said C-shaped band is adjustable and includes tele-

scopic segments with peel away coverings to expose adhesive rear surfaces, so that said adjustable C-shaped band can be

better worn on various sized parts of the extremities of the person.

5,193,027

OPTICAL FILTER TUNING APPARATUS AND AN OPTICAL FILTERING METHOD

Keith R. Preston, Woodbridge, England, assignor to British Telecommunications plc, London, United Kingdom

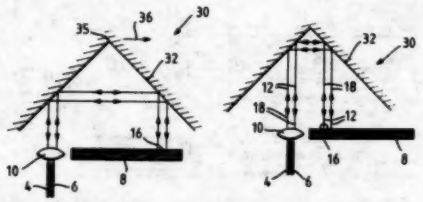
PCT No. PCT/GB90/00049, § 371 Date Aug. 14, 1991, § 102(e) Date Aug. 14, 1991, PCT Pub. No. WO90/08335, PCT Pub. Date Jul. 26, 1990

PCT Filed Jan. 12, 1990, Ser. No. 743,404

Claims priority, application United Kingdom, Jan. 13, 1989, 8900730

Int. Cl.[5] G02B *5/32, 5/18, 5/26*

U.S. Cl. 359—566 17 Claims



1. An optical filter tuning apparatus comprising:

an optical filter which reflects light of a predetermined wavelength, said wavelength being determined by the position of incidence of said light on said filter; and

a retroreflector moveable relative to said filter and which is used to reflect light from an optical source to said position of incidence on said filter and reflect light of said predetermined wavelength to optical receiving means;

said position of incidence and said predetermined wavelength being adjustable by moving said retroreflector with respect to said filter.

5,193,028

OPTICAL SYSTEM FOR ELIMINATING GHOST IMAGE IN WIDE WAVELENGTH BAND

Masato Noguchi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

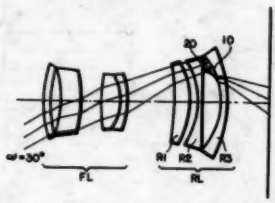
Filed Nov. 8, 1991, Ser. No. 790,410

Claims priority, application Japan, Sep. 11, 1990, 2-305778

Int. Cl.[5] G02B *1/10, 5/28, 7/04*

U.S. Cl. 359—581 26 Claims

1. In a transmission optical system of the type including a plurality of transmission optical elements having boundary reflection surfaces which form a ghost image when light is reflected by at least two specific boundary reflection surfaces, the improvement comprising a ghost eliminating optical system in which said specific boundary reflection surfaces are coated with at least two anti-reflection coatings having complementary reflection characteristics to eliminate said ghost image, said two anti-reflection coatings being such that the



total anti-reflection curve characteristic of the two coatings, over a wide wavelength band, is flatter than the anti-reflection curve characteristic of either of the two anti-reflection coatings taken individually.

5,193,029

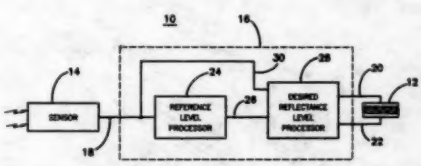
SINGLE SENSOR ADAPTIVE DRIVE CIRCUIT FOR REARVIEW MIRROR SYSTEM

Kenneth Schofield; Richard J. Gahan, both of Holland; Kenneth L. Schierbeek, Zeeland, and Mark L. Larson, Grand Haven, all of Mich., assignors to Donnelly Corporation, Holland, Mich.

Filed Nov. 19, 1991, Ser. No. 794,441

Int. Cl.[5] G02B *17/00*

U.S. Cl. 359—604 33 Claims



1. An automatic rearview mirror system for a vehicle comprising:

a reflective element that is actuatable between at least two different reflectance conditions;

a single light sensing means for sensing light incident to said reflective element; and

processing means responsive to said light sensing means for producing a slow-transient indication as a function of said light incident to said reflective element and for indicating a desired reflectance level of said reflective element as a function of said slow-transient indication and said light incident to said reflective element.

5,193,030

ZOOM FINDER SYSTEM

Katsuhiko Nozaki, and Tetsuya Abe, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo K.K., Tokyo, Japan

Division of Ser. No. 426,655, Oct. 26, 1989, Pat. No. 4,992,809. This application Oct. 11, 1990, Ser. No. 596,102

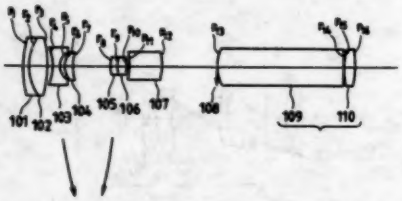
Claims priority, application Japan, Oct. 28, 1988, 63-140823[U]; Dec. 27, 1988, 63-330466; Dec. 27, 1988, 63-330467

Int. Cl.[5] G02B *15/14;* G03B *13/02, 13/10*

U.S. Cl. 359—687 9 Claims

1. A zoom finder comprising an objective optical system having a positive overall power and an eyepiece optical system having a positive overall power, said objective optical system comprising, in order from the object side, a first lens group having a positive power, a second lens group having a negative power, and a third lens group having a positive power, the image formed by said objective optical system being focused

approximately at the first surface of said eyepiece optical system, said second and third lens groups being moved to effect



zooming with the eyesight through the finder being held constant.

5,193,031

DIVERGENCE AND MARKING DEVICE FOR A TARGET MARKER

Michel Baikrich, 42 Xhierfomont, 4086 Stoumont, Belgium

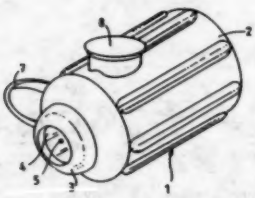
PCT No. PCT/BE90/00025, § 371 Date Feb. 22, 1991, § 102(e) Date Feb. 22, 1991, PCT Pub. No. WO91/00489, PCT Pub. Date Jan. 10, 1991

PCT Filed Jun. 1, 1990, Ser. No. 635,118

Claims priority, application Belgium, Jun. 28, 1989, 8900703

Int. Cl.[5] G02B *27/20, 27/00*

U.S. Cl. 359—800 13 Claims



1. A laser beam type marker comprising a casing in which a laser generator is accommodated, the head of the casing having an aperture to allow the passage of the laser beam produced by the laser generator, characterised in that the aperture is blocked by a divergent lens perforated by a central hole such that the laser rays which reach the lens round the central hole produce a divergent beam while the rays which reach the central hole pass through it without being deflected so as to form a fine pencil of light of higher intensity which serves to mark a target.

5,193,032

UNIVERSAL PRESCRIPTION BOTTLE INSTRUCTION LABEL MAGNIFIER

Frederick A. Hirth, 37547 Arbor La., Palmdale, Calif. 93552

Filed Mar. 19, 1992, Ser. No. 854,039

Int. Cl.[5] G02B *27/02*

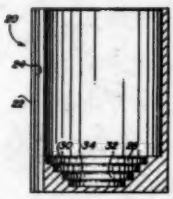
U.S. Cl. 359—804 21 Claims

1. An apparatus for magnifying the instruction label on a medicine bottle, comprising:

a housing member having side walls, an open top side, and a bottom side;

receiving means, located in said bottom side of said housing member, for receiving one of a plurality of different sizes of medicine bottles inserted into said housing member through said open top side of said housing member;

a longitudinally extending slot located in said side walls of said housing member, said longitudinally extending slot being open on said top side of said housing member; and



a lens member for magnifying the instruction label on a medicine bottle, said lens member being installed in said longitudinally extending slot.

5,193,033

MAGNETIC RECORDING AND REPRODUCING APPARATUS INCORPORATING CLOGGING DETECTION

Hiroshi Shimoi, Kyoto; Takafumi Inadomi, Hyogo; Ryoichi Nakamura, Hyogo, and Kan Kawahara, Kyoto, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

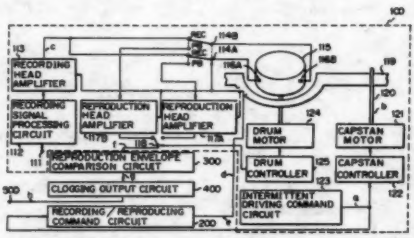
Continuation of Ser. No. 351,949, May 15, 1989, abandoned.

This application Nov. 18, 1991, Ser. No. 794,784

Claims priority, application Japan, May 17, 1988, 63-120922; Oct. 11, 1988, 63-255251

Int. Cl.[5] G11B *27/36, 5/41*

U.S. Cl. 360—31 8 Claims



1. A magnetic recording and reproducing apparatus including magnetic tape movement means in which a magnetic tape is wound around a rotary drum, comprising:

a magnetic head on said drum operating in a recording mode wherein the magnetic head intermittently records signals on the magnetic tape and also operating in a reproducing mode wherein the magnetic head reproduces signals from the magnetic tape;

a controller for controlling operation of the magnetic head, said controller including:

means for determining completion of an interval of reading signals;

means for automatically switching the magnetic head to reproducing mode, after completion of the interval of recording signals, to reproduce signals intermittently recorded during the interval;

envelope comparison means for producing a comparison signal when an envelope signal based on the reproduced intermittently recorded signals is higher than a predetermined value, said comparison signal comprised of peaks corresponding to portions of the envelope signal that exceed the predetermined value;

clogging output means for outputting a clogging signal in response to the comparison signal from the envelope comparison means; and

a cleaning mechanism for cleaning the magnetic head when the clogging signal indicates that the head is clogged, said cleaning mechanism comprising:

a solenoid that is energized in response to said clogging signal;

a solenoid shaft that moves when the solenoid is energized;

a roller that is urged against the head when the solenoid is energized to clean the head;

a support shaft that is coupled to the roller;

a transmitting plate coupled to said support shaft and to said solenoid shaft to transfer movement of the solenoid shaft when the energized to the support shaft such that the support shaft and the solenoid shaft concurrently move in parallel to each other; and

means for limiting movement of the support shaft.

5,193,034

MAGNETIC DISK APPARATUS OF CONSTANT-DENSITY RECORDING TYPE, MAGNETIC DISK USED THEREFOR AND SERVO-WRITING DEVICE FOR PATTERNING ON THE MAGNETIC DISK

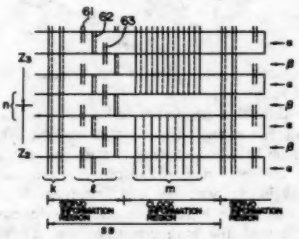
Toshiaki Tsuyoshi, Kawasaki; Yosuke Seo, Sagamihara; Hajime Aoi, Tachikawa, and Makoto Saito, Hiratsuka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 12, 1990, Ser. No. 551,808

Claims priority, application Japan, Jul. 17, 1989, 1-182575

Int. Cl.[5] G11B *27/30*

U.S. Cl. 360—51 **20 Claims**



12. A constant-density recording type magnetic disk, comprising:

at least one surface of said magnetic disk being divided into a plurality of zones having boundaries in the radial direction thereof;

a plurality of tracks provided in each of said divided zones and extending in the circumferential direction, the number of said tracks being arbitrary in each of the divided zones;

servo information regions and data recording regions alternately provided on each of said tracks;

a plurality of sectors, each constituted by a pair of adjacent ones of the servo information region and the data recording region, adjacent to each other in the circumferential direction of the disk, and forming in the same zone, substantially the same angle with respect to the rotation center of the magnetic disk;

the servo information regions in the same divided zone and in the same sector being arranged to form a sectoral region substantially extending from the center of said disk;

the physical length of one sector in the innermost track in each said divided zone being substantially the same for each said divided zone; and

a generally concentric, annular region provided at each of the boundaries between adjacent ones of said divided zones where not data is recorded by a user, but wherein servo information that is written in each one of the adjacent divided zones is further written in said annular region from respective side edges of said annular region by at least a half track width.

5,193,035

APPARATUS AND METHOD FOR PHASE CORRECTION OF A CLOCK SIGNAL BY CONTROLLING THE VARIABLE DELAYING THEREOF

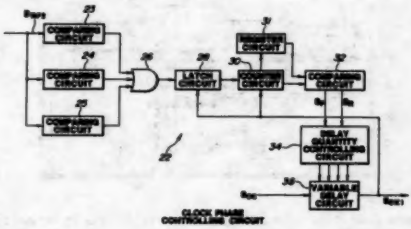
Keiji Kanota, and Takahito Seki, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 27, 1990, Ser. No. 558,624

Claims priority, application Japan, Jul. 31, 1989, 1-198882

Int. Cl.[5] G11B *5/09*; H04N *5/78*

U.S. Cl. 360—51 **14 Claims**



1. A phase correction apparatus for an input signal having an eye-pattern, comprising:

clock signal generating means for receiving said input signal and generating a clock signal in synchronization with said input signal;

clock signal delaying means for variably delaying said clock signal and providing therefrom a playback clock signal;

signal level comparing means for comparing a signal level of said input signal with a predetermined reference signal level and providing a corresponding output at times determined by said playback clock signal;

counter means for counting each said output from said signal level comparing means occurring in a predetermined time period;

memory means for storing a count value from said counter means at completion of each said predetermined time period and for holding said count value, as a previous count value, until a new count value is received from said counter means at completion of a next said predetermined time period, whereupon the memory means outputs said previous count value and stores the new count value;

count value comparing means for comparing said previous count value from said memory means and a current count value output from said counter means during said predetermined time period and determining a comparison value signal indicative of a comparison of said previous count value and said current count value; and

means for controlling the variable delaying of said clock signal by said clock signal delaying means in accordance with said comparison value signal and thereby controlling a phase of said playback clock signal so that pulses of said playback clock signal occur at times when said eye pattern of said input signal reaches a maximum value.

5,193,036

TRANSDUCER HEAD SKEW ARRANGEMENT FOR DISK DRIVE SYSTEM

Martin R. Green; Randolph B. Heineke, and John J. Stephenson, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 2, 1990, Ser. No. 591,910

Int. Cl.[5] G11B *5/596, 5/584*

U.S. Cl. 360—78.14 **16 Claims**

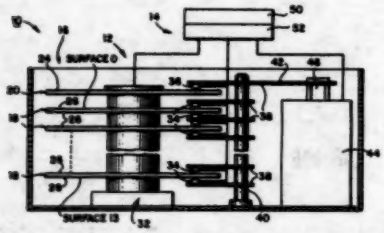
1. A disk drive data storage system comprising:

a plurality of disk surfaces mounted in parallel for simultaneous rotation about an axis;

a plurality of data information tracks on each disk surface for storing data; corresponding consecutive ones of said plurality of data information tracks on successive consecutive

data disk surfaces defining a plurality of consecutive logical data cylinders;

at least one servo reference track on each disk surface for storing servo reference information; on each successive consecutive data disk surface said servo reference track being offset in a radial direction relative to a reference track on a prior data disk surface toward a next consecutive logical data cylinder;



said data information tracks disposed at predetermined positions relative to said at least one servo reference track on each said disk surface; sequential ones of said data information tracks in each cylinder being progressively offset in a radial direction toward a next consecutive logical data cylinder; and

a plurality of data transducer heads mounted for movement in a radial direction across said disk surfaces for reading said servo reference tracks and for reading and/or writing data to said data information tracks.

5,193,037

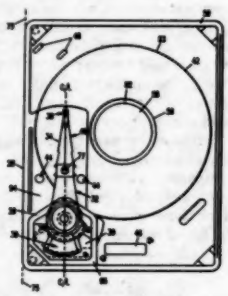
COMPACT DISK DRIVE FOR USE WITH LAPTOP COMPUTER

Louis G. Pace, Santa Clara, Calif., assignor to Areal Technology, Inc., San Jose, Calif.

Filed Nov. 7, 1990, Ser. No. 610,855

Int. Cl.[5] G11B 5/55

U.S. Cl. 360—106 **10 Claims**



1. A compact disk drive comprising :

a baseplate having a substantially rectangular configuration;

a drive motor mounted to said baseplate;

at least one magnetic disk having a central aperture for seating said disk to said drive motor for rotation by said drive motor; means for clamping said magnetic disk to said drive motor;

a rotatable head arm assembly having longitudinal flexures for supporting head sliders; and

a rotary head actuator coupled to said head assembly, including a magnet housing, said housing being contoured and disposed substantially within a corner of the rectangular baseplate, said flexures being oriented in a direction substantially parallel to the longitudinal sides of said baseplate when said head arm assembly is in home position.

5,193,038

SHORTED DUAL ELEMENT MAGNETORESISTIVE REPRODUCE HEAD EXHIBITING HIGH DENSITY SIGNAL AMPLIFICATION

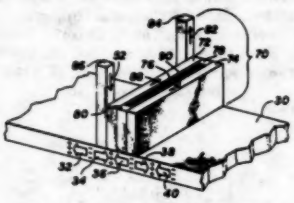
Neil Smith, San Diego, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 500,978, Mar. 29, 1990, Pat. No. 5,084,794.

This application Dec. 5, 1991, Ser. No. 802,576

Int. Cl.[5] G11B 5/30

U.S. Cl. 360—113 **9 Claims**



1. A magnetic head assembly for detecting magnetically recorded signals comprising:

a) a first thin film magnetoresistive element, having a first long dimension and a first short dimension, said first short dimension being orthogonal to said first long dimension,

b) a thin film non-magnetic electrically conductive spacer planarly in contact with said first magnetoresistive element, said spacer having a second long dimension at least equal to said first long dimension and having a second short dimension at least equal to said first short dimension,

c) a second thin film magnetoresistive element in contact with said conductive spacer and having a long and a short dimension, wherein said second magnetoresistive element is substantially matched to said first magnetoresistive element for magnetic and electrical characteristics, whereby said spacer separates said first and said second magnetoresistive elements,

d) means for producing longitudinal concurrent current flow in said first and second magnetoresistive elements, to unsaturatedly mutually magnetically bias said first and said second magnetoresistive elements in a direction that is less than ninety degrees from the direction of concurrent current flow,

e) means of coupling magnetic signal fields from said magnetically recorded signals to said first and said second magnetoresistive elements along said short dimensions of said magnetoresistive elements, whereby said first and said second magnetoresistive elements are concurrently responsive to said signal fields, further wherein said means for coupling signal fields for concurrently couples alternating direction signal fields to said first and said second magnetoresistive elements respectively, whereby said alternating fields cooperate with said first and said second magnetoresistive elements to provide amplification of the change in said magneto resistive elements in response to said signal fields, and

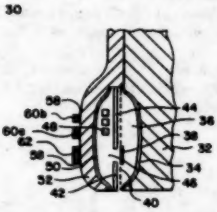
f) means for detecting said resistance change in said magnetoresistive elements in response to said signal fields.

5,193,039

PERMANET MAGNET EASY-AXIS BIASED MAGNETORESISTIVE HEAD

Alan B. Smith, Lincoln, and Michael Mallary, Berlin, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Apr. 17, 1991, Ser. No. 686,596
Int. Cl.[5] G11B 5/39
U.S. Cl. 360—113 16 Claims



1. A thin film magnetic head for sensing of flux from a magnetic storage medium, the head comprising

a magnetoresistive element and a pole structure, the element and pole structure formed within a means for encapsulating the element and pole structure, such that magnetic flux can flow from an adjacent magnetic medium through the pole structure for sensing of the flux by the magnetoresistive element, and

magnetic bias means formed on the encapsulation layer for supplying biasing to the magnetoresistive element.

5,193,040

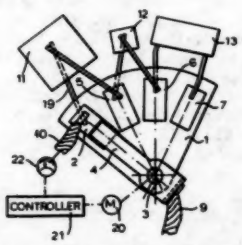
Patent Not Issued For This Number

5,193,041

ELECTRICAL CURRENT INTERRUPTER

Louis M. J. Chanois, Creches S/Saone, France, assignor to Stop Circuit, Macon, France

Filed Jun. 4, 1992, Ser. No. 894,844
Claims priority, application France, Jun. 7, 1991, 91 07194
Int. Cl.[5] H02H 7/00
U.S. Cl. 361—13 11 Claims



1. An electrical circuit interrupter for connection between two conductors, the interrupter comprising:

a first fixed contact electrically directly connected to one of the conductors;

a second fixed contact adjacent the first fixed contact;

a movable contact electrically directly connected to the other of the conductors and displaceable between

a first closed position engaging only the first fixed contact,

a second position engaging only the second contact, and

an open position engaging neither of the fixed contacts; and

a positive-temperature-coefficient resistor connected between the first and second fixed contacts, whereby

in the first position current can flow between the conductors without passing through the resistor,

in the second position current flows through the resistor and current flow is limited thereby, and

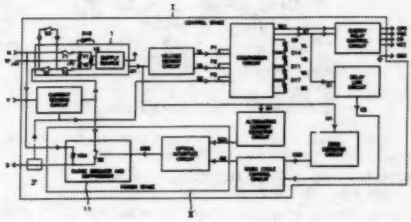
in the open position current does not flow between the conductors.

5,193,042

AUTOMATIC ENERGIZING DAMPING DEVICE

Carlos A. Espinoza, and Jose Velazquez, both of Edomex, Mexico, assignors to Dielpromex S.A. de C.V., Tacubaya, Mexico

Filed Dec. 7, 1990, Ser. No. 624,360
Int. Cl.[5] H02H 3/20
U.S. Cl. 361—79 6 Claims



1. An automatic electronic, delayed-action energizing damper capable of connection to an electric power supply network of alternating current having voltage and current parameters and to which a load is connected, the damper comprising:

an electronic power supply means for providing electric energy to the circuitry of the energizing damper;

voltage sensing means connected to said electronic power supply means for sensing the voltage parameter of the electric power supply network;

current sensing means for sensing the current flow across the energizing damper to the load;

comparator means for comparing signals supplied by the current and voltage sensing means with reference values;

energy relay control means for generating operation control signals;

delay line means for delaying startup signals to the duty cycle control means;

zero crossing detector means for detecting when a signal output from the electronic power supply source means is zero providing an output signal in response thereto, and which signal is a multiple of the frequency of the electric power supply network synchronizing thus the operating frequency of the energizing damper;

alternating current detector means for detecting the presence of electric energy incoming to the energizing damper from the electric power supply network;

duty cycle control means responsive to the output signal of said zero crossing detector means and to the startup signal of said delay line means for generating a command signal

an optical interface circuit responsive to the output signal of the alternating current detector means and a command signal from the said duty cycle control means for generating a commuting command signal;

a solid state electronic switch means responsive to the commuting command signal for commuting the power to the load; and

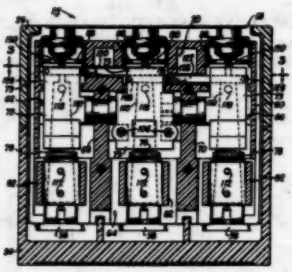
surge suppressor means for limiting the amplitude of surge voltages across the energizing damper.

5,193,043

PHASE SENSITIVITY

Kurt A. Grunert, Beaver; Robert J. Tedesco, Coraopolis; John A. Wafer, Brighton Twp., Beaver County; Henry A. Wehrli, III, Monroeville, all of Pa.; Lawrence M. Hapeman, Fletcher, N.C., and Stephen A. Mrenna, Brighton Twp., Beaver County, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 26, 1990, Ser. No. 543,985
Int. Cl.[5] H01H *75/10*
U.S. Cl. 361—93 15 Claims



1. A multipole molded case circuit breaker comprising:

a base;

a plurality of pairs of separable main contacts disposed in said base;

means for opening said pairs of separable main contacts including a trip bar;

means for detecting an open circuit condition in an electrical load connected to said circuit breaker including means for interfacing said detecting means with said opening means which includes one or more movably mounted members disposed a predetermined distance from said trip bar during normal conditions adapted to engage said trip bar during an open circuit condition; and

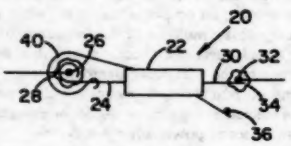
wherein said detecting means includes a primary bimetal and a secondary bimetal per pole, said secondary bimetals having extending posts formed on a free end.

5,193,044

APPARATUS FOR LINE CARD POWER CROSS PROTECTION

Richard M. Czerwiec, Raleigh, N.C., assignor to Alcatel Network Systems, Inc., Richardson, Tex.

Filed Aug. 29, 1990, Ser. No. 576,201
Int. Cl.[5] H01H *37/00*
U.S. Cl. 361—104 15 Claims



1. An apparatus for protecting a circuit from excessive current provided by a current-carrying metallic line connected to said circuit, said apparatus comprising:

resistive means, having first and second leads serially connected in said line, for generating heat in response to current carried in said line; and

fusible material means disposed in proximity to said resistive means and being responsive to said heat for breaking the serial connection of the resistive means in said current-carrying line; and

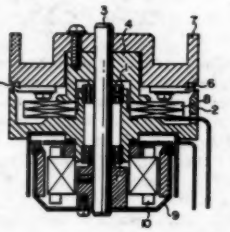
said first lead being hingedly connected and joined by said fusible material means to a first terminal post in said circuit, and the second lead being detachably mounted by said fusible material means to a second terminal post in said circuit.

5,193,045

HELICAL SCAN TYPE MAGNETIC RECORDING AND/OR REPRODUCING APPARATUS HAVING COMBINATION TYPE VIDEO HEAD AND FLYING ERASE HEAD FOR LOW VIBRATION

Masanori Kochi; Juichi Morikawa; Hideo Zama, and Makoto Ibe, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 28, 1991, Ser. No. 723,182
Claims priority, application Japan, Jul. 13, 1990, 2-183904
Int. Cl.[5] G11B *5/027*
U.S. Cl. 360—84 2 Claims



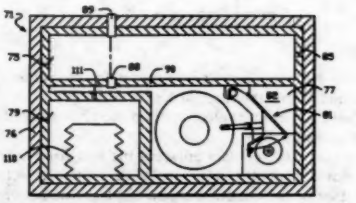
1. A helical scan type magnetic recording and/or reproducing apparatus having a combination type video head which has first and second video head chips fixed on a video head base and which is mounted on a rotating drum, wherein a flying erase head for erasing is provided on said rotating drum so as to be spaced substantially 180 degrees from said video head, and wherein the values of $M_d \times R_d$ and $M_f \times R_f$ are made substantially equal where M_d is the mass of said combination head, R_d is the distance between the center of gravity of said combination head and the rotation center of said rotating drum, M_f is the mass of said flying erase head, and R_f is the distance between the center of gravity of said flying erase head and the rotation center of said rotating drum.

5,193,046

INFORMATION RECORDING APPARATUS WITH A LIQUID BEARING

James U. Lemke, San Diego; William W. French, Encinitas, and William B. McHargue, La Jolla, all of Calif., assignors to Conner Peripherals, nc., San Jose, Calif.

Continuation of Ser. No. 259,344, Oct. 17, 1988, abandoned.
This application Sep. 25, 1990, Ser. No. 590,608
Int. Cl.[5] G11B *33/14, 5/60, 15/64, 17/32*
U.S. Cl. 360—97.02 24 Claims



1. An information storage system, comprising:

a storage medium, said storage medium being relatively rigid;

means for rotating said storage medium;

transducer means positioned in a spaced relationship with

said storage medium in response to movement of said storage medium for transferring information for storage on said storage medium and to receive stored information from said storage medium;

loading means for exerting a positioning force on said transducer means, said loading force being directed toward said storage medium; and

a liquid bearing provided between and in contact with said storage medium and said transducer means and cooperating with said loading means for supporting said transducer means in said spaced relationship at a distance of less than about 10 micro inches during said movement of said storage medium, said loading means maintaining said transducer means in contact with said liquid bearing.

5,193,047

PROTECTION OF ELECTRONIC CIRCUITS

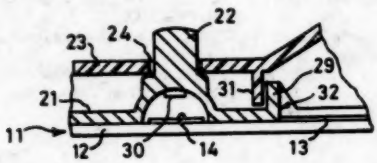
Stephen C. Barratt, Hornchurch, and Brian W. Grant, Chelmsford, both of United Kingdom, assignors to Alcatel Business Systems Limited, Romford, United Kingdom

Filed Oct. 30, 1989, Ser. No. 428,980

Claims priority, application United Kingdom, Nov. 1, 1988, 825534

Int. Cl.[5] H05K *9/00*

U.S. Cl. 361—212 **5 Claims**



1. Electronic apparatus including a printed circuit board carrying on a face thereof electronic circuits and an array of switch contact pads; a face panel extending over and spaced from said printed circuit board and having an array of apertures therein; a mat of electrically insulating deformable material including an array of key buttons moulded in said mat, said key buttons being provided with electrically conductive contacts and extending through corresponding apertures in said face panel; said mat including an integral marginal portion extending outwardly from said array of key buttons; said mat extending over said face of said printed circuit board between said printed circuit board and said face panel with an air space between said face panel and said mat; said electrically conductive contacts being located opposite corresponding switch contact pads and movable into electrical contact with said corresponding switch contact pads by manual operation of the key buttons; said mat of electrically insulating material providing a continuous layer of electrically insulating material extending over substantially the whole of said face of said printed circuit board; wherein said marginal portion includes a wall extending away from the face of the printed circuit board and said face panel includes a rib extending toward the mat between said wall and said array of key buttons such that a static discharge track from the key buttons through said air space to the circuits on the circuit board is constrained to extend between the wall and the rib.

5,193,048

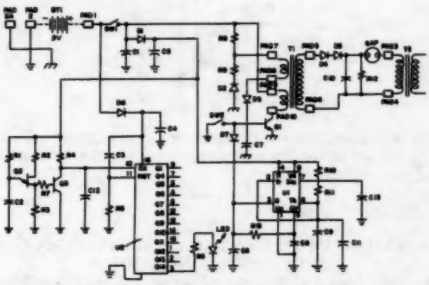
STUN GUN WITH LOW BATTERY INDICATOR AND SHUTOFF TIMER

Dennis R. Kaufman, 5508 Sutton La. #A, Willoughby, Ohio 44094, and William A. Keeley, 1951 N. Baldwin Rd., Oxford, Mich. 48051

Filed Apr. 27, 1990, Ser. No. 516,120

Int. Cl.[5] H05C *1/04*

U.S. Cl. 361—232 **42 Claims**



33. An electrical shock device comprising:

a housing containing a power supply and an electronic circuit having the electrical shock device;

trigger means on the housing for selectively connecting the power supply to the electric circuit when in a first position; and,

low power source indicating means for indicating the trigger means operated in the first position for a first predetermined time period.

39. An electrical shock device comprising:

a housing containing a power supply and an electronic circuit forming the electrical shock device;

trigger means on the housing for selectively connecting the power supply to the electronic circuit when in a first position; and,

means for disabling the electronic circuit when the trigger means is continuously operated in said first position for a first predetermined time period.

5,193,049

ENCLOSURES FOR ELECTRICAL SWITCHGEAR

Leonard Jackson, Newcastle upon Tyne, England, assignor to Northern Engineering Industries, plc, Newcastle upon Tyne, England

Continuation-in-part of Ser. No. 610,749, Nov. 8, 1990, abandoned. This application Sep. 23, 1991, Ser. No. 764,080

Claims priority, application United Kingdom, Dec. 1, 1989, 8927193

Int. Cl.[5] H05K *7/20*

U.S. Cl. 361—379 **9 Claims**

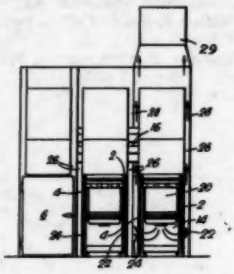
1. An enclosure for electrical switchgear, comprising:

a plurality of walls defining an upper enclosure portion and lower enclosure portion;

at least one of said plurality of walls being one sidewall defining a part of said upper enclosure portion and said lower enclosure portion, said sidewall having an outlet in said lower enclosure portion, said outlet being closed with a flexible sheet cover displaceable from its closed position by an increase of pressure within said enclosure;

a vertically movable circuit breaker assembly contained within said lower enclosure portion, said vertically move-

able circuit breaker assembly having a sealed chamber which houses at least one circuit breaker, and



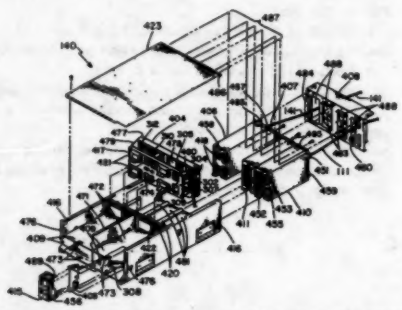
at least one exhaust chimney having a plurality of walls and defined in part by said sidewall, said outlet feeding into said exhaust chimney.

5,193,050

ENCLOSURE FOR ELECTRONIC SUBSYSTEMS IN A DATA PROCESSING SYSTEM

Roger F. Dimmick, Rochester; Vernon J. Kleve, Pine Island; Timothy L. Meyer, Mazeppa; Gary A. Thompson, Pine Island, and Gordon W. Westphal, Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 14, 1991, Ser. No. 794,314
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—384 **21 Claims**



17. An apparatus for mounting multiple electronic modules of a first type and a second type together in a rack, said apparatus extending horizontally the full width of said rack and adapted to be mounted above and below other similar apparatus in said rack and electrically interconnected thereto by intra-rack cables coupled to said modules of the second type, said apparatus comprising:

a frame member forming the outlines of a substantially rectangular parallelepiped conforming to the interior width of said rack;

an interconnection carrier attached to said frame member, extending the width of said rectangular parallelepiped and dividing said parallelepiped into front and rear regions, said interconnection carrier having a front face facing said front region and a rear face facing said rear region, said front face bearing a first plurality of electrical connectors for receiving the electronic modules of said first type, and said rear face bearing a second plurality of electrical connectors for receiving the electronic modules of said second type, said carrier further including electrical wiring interconnecting said electrical connectors of said first and second pluralities;

one or more bay members attached to said frame member for dividing said front region into a plurality of front bays, each said bay extending from the front of said rectangular parallelepiped to the front face of said interconnection carrier, and adapted to receive said first type of the electronic module by horizontal sliding motion from the front of said apparatus into said front bay;

wherein said first plurality of electrical connectors comprise means for mating with electrical connection means of the electronic module of said first type as said electronic module is inserted into said bay by horizontal sliding motion;

wherein said second plurality of electrical connectors comprise means for mating with electrical connection means of the electronic module of said second type as said electronic module is inserted into said rear region of said apparatus by horizontal sliding motion;

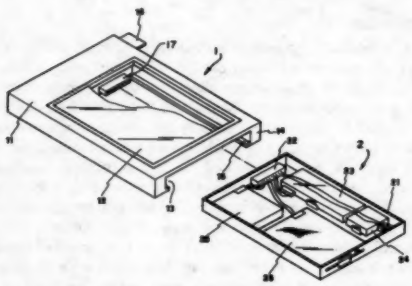
an environmental module attached to said frame member, mounted behind said rear region and extending the width of said parallelepiped, said environmental module including powered cooling means for moving air horizontally through said front bays, said interconnection carrier, and said rear region.

5,193,051

SLIDING BOX TYPE PEN BASE COMPUTER WITH LCD AND MOTHER BOARD IN A BASE AND WITH BATTERY, POWER SUPPLY, AND DISK DRIVES IN A SLIDING BOX

Hsi-Kuang Ma, 4F, No. 48, Sec. 2, Chung Cherng Road, Taipei, Taiwan

Filed Apr. 22, 1992, Ser. No. 872,026
Int. Cl.[5] H05K *7/10*; G06F *1/16*
U.S. Cl. 361—393 **1 Claim**



1. A sliding box type pen base computer comprising:

a base, said base comprising a mother board and a liquid crystal display (LCD) at the top and supported on two longitudinal side stands, and a connector circuit for connecting an external peripheral equipment, said side stands defining therebetween a receiving chamber and having inward flanges at the bottom; and

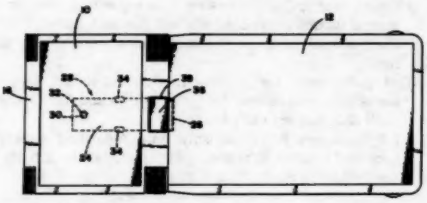
a sliding box movably inserted into said receiving chamber and supported on said inward flanges, said sliding box comprising a battery box, a power supply unit, a floppy disk drive and a hard disk drive on the inside surrounded by a vertical peripheral wall and electrically connected to said base.

5,193,052

FONT CARTRIDGE EXTENDER WITH SPRING HOOK LATCH

Gregory P. Larson, Moorpark, and Frank Wilkinson, Chatsworth, both of Calif., assignors to Advanced Matrix Technology, Inc., Camarillo, Calif.

Filed Nov. 7, 1991, Ser. No. 788,831
Int. Cl.[5] H05K *1/14, 7/12;* H01R *13/62*
U.S. Cl. 361—395 20 Claims



1. A latching mechanism for securing a font cartridge extender to a printer font cartridge, comprising:

(a) a font cartridge extender adapted for coupling to a printer font cartridge, the extender comprising a circuit board enclosed in a protective case for connecting a data bus between a printer, the font cartridge extender, and the font cartridge;

(b) a chute in the case;

(c) a spring hook residing in the chute for engaging a lip on the font cartridge; and

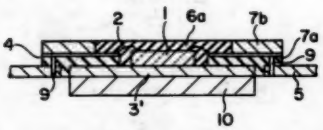
(d) braces for guiding the spring hook within the chute.

5,193,053

PLASTIC PACKAGED SEMICONDUCTOR DEVICE

Kaoru Sonobe, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 23, 1991, Ser. No. 781,772
Claims priority, application Japan, Oct. 29, 1990, 2-291588
Int. Cl.[5] H05K *5/02*
U.S. Cl. 257—668 4 Claims



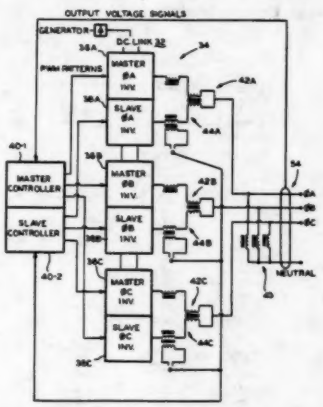
1. A plastic packaged semiconductor device comprising a lead frame provided with an island for loading a semiconductor element in the central part thereof and a plurality of leads which are projected from an outer frame having a square shape and distributed around the periphery of the island; an insulating substrate which covers one principal surface of the island and a part of the leads and is bonded thereto while exposing the semiconductor element; distributing wires which are formed on one principal surface of the insulating substrate so as to be in conformity with the leads; a conductive substance which connects the distributing wires to the leads and fills throughholes formed in the insulating substrate; bonding wires which connect input-output terminals of the semiconductor element to the leads; and a resin body which encloses and embeds the bonding wires and the semiconductor element.

5,193,054

DC CONTENT CONTROL IN A DUAL VSCF CONVERTER SYSTEM

Gary L. Galloway, Rockford; Thomas S. Latos, Huntley, and Derrick Roe, Rockford, all of Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Oct. 24, 1991, Ser. No. 781,920
Int. Cl.[5] H02M *7/48*
U.S. Cl. 363—72 14 Claims



1. In a polyphase electric power system with first and second inverters having common phase outputs connected in parallel to inductive elements for connection to a load, a control comprising:

a first sensing means for sensing per phase output voltage from said inductive elements;

a second sensing means operatively associated with the outputs of both inverters for each phase for sensing differential current from said inverters for such phase; and

an inverter control connected to said first and second sensing means including first control means for developing pulse width modulated control signals to said first inverter in response to said first sensing means to control output voltage and second control means for developing pulse width modulated control signals to said second inverter to reduce differential current sensed by said second sensing means.

5,193,055

ACCOUNTING SYSTEM

Gordon T. Brown, and Richard H. Scherer, both of 631 Iron City Dr., Pittsburgh, Pa. 15205

Continuation of Ser. No. 280,220, Dec. 5, 1988, abandoned, which is a continuation-in-part of Ser. No. 21,249, Mar. 3, 1987, abandoned. This application Jan. 14, 1991, Ser. No. 640,542
Int. Cl.[5] G06F *15/30*
U.S. Cl. 364—406 5 Claims

1. A method of producing through a service company an accounting statement suitable for a customer, such as an individual, a small business and the like, the method comprising the steps of

providing to the customer a pre-established group of standard category codes,

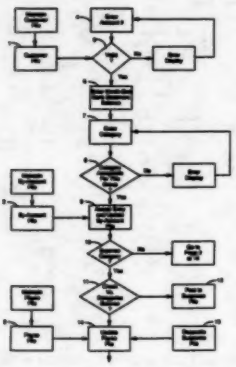
entering category codes selected by the customer from the pre-established group into a computer file,

entering information identifying a customer account into the computer,

determining the cash balance in the customer account from a bank statement for the account,

entering into the computer the account balance as shown by the bank statement balance for the account,

receiving copies of money transfer instructions including at least one category code selected by the customer,
entering into the computer debits made against the account along with category codes selected by the customer,
entering into the computer credits made to the account along with category codes selected by the customer,
holding in the computer prior computer-generated account balances,
generating, from the entries, reports from one or more of three tiers, namely,
(a) Income/Expense (cash basis)



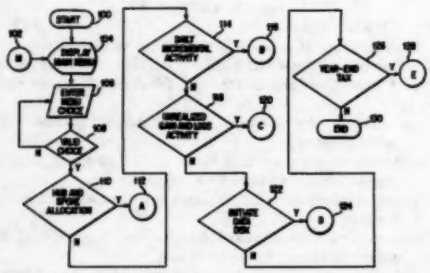
(b) Accruals
(c) Statistical
the steps of generating said reports including at least:
adding to the prior computer-generated account balance the amount of credits to the account, and subtracting the amount of debits represented by the money transfer instructions to obtain an updated computer-generated account balance based on the prior account balance,
reconciling the computer-generated account balance with the bank statement, and
printing an account statement.

5,193,056

DATA PROCESSING SYSTEM FOR HUB AND SPOKE FINANCIAL SERVICES CONFIGURATION

R. Todd Boes, Boston, Mass., assignor to Signature Financial Group Inc., Boston, Mass.

Filed Mar. 11, 1991, Ser. No. 667,777
Int. Cl.[5] G06F *15/21, 15/30*
U.S. Cl. 364—408 **6 Claims**



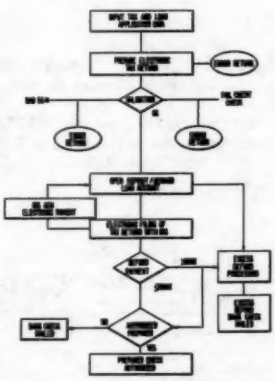
1. A data processing system for managing a financial services configuration of a portfolio established as a partnership, each partner being one of a plurality of funds, comprising:
(a) computer processor means for processing data;
(b) storage means for storing data on a storage medium;
(c) first means for initializing the storage medium;
(d) second means for processing data regarding assets in the portfolio and each of the funds from a previous day and data regarding increases or decreases in each of the funds, assets and for allocating the percentage share that each fund holds in the portfolio;
(e) third means for processing data regarding daily incremental income, expenses, and net realized gain or loss for the portfolio and for allocating such data among each fund;
(f) fourth means for processing data regarding daily net unrealized gain or loss for the portfolio and for allocating such data among each fund; and
(g) fifth means for processing data regarding aggregate year-end income, expenses, and capital gain or loss for the portfolio and each of the funds.

5,193,057

ELECTRONIC INCOME TAX REFUND EARLY PAYMENT SYSTEM WITH MEANS FOR CREATING OF A NEW DEPOSIT ACCOUNT FOR RECEIPT OF AN ELECTRONICALLY TRANSFERRED REFUND FROM THE IRS

Ross N. Longfield, Far Hills, N.J., assignor to Beneficial Franchise Company Inc., Wilmington, Del.

Continuation of Ser. No. 384,654, Jul. 25, 1989, which is a continuation of Ser. No. 146,324, Jan. 20, 1988, Pat. No. 4,890,228. This application Nov. 20, 1990, Ser. No. 615,903
The portion of the term of this patent subsequent to Dec. 26, 2006, has been disclaimed.
Int. Cl.[5] G06F *15/30*
U.S. Cl. 364—408 **5 Claims**



1. An electronic data processing system for electronic filing of income tax returns and authorizing tax refund payments comprising:
a) at least one programmable electronic data processing means for executing programmed arithmetic and logical processes and storing data;
b) at least one input means for inputting tax preparer data, tax return data and tax refund payment data to said at least one data processing means;
c) program means executable by said at least one data processing means for processing said tax preparer data and said tax return data and creating electronic tax return data files;
d) program means executable by said at least one data processing means for processing tax refund payment data and

creating electronic deposit account files at an authorized financial institution;

e) program means executable by said at least one data processing means for processing said tax return data files and said electronic deposit account files and for transmitting electronic tax return data to at least one electronic data processing means controlled by at least one tax collecting authority and designating said electronic deposit account file at the authorized financial institution as the recipient of electronic funds transfer data from at least one electronic data processing means controlled by at least one tax collecting authority;

f) program means executable by said at least one data processing means for processing said tax return data files and said electronic deposit account files and authorizing payment by said financial institution of a tax refund amount from said deposit account upon electronic funds transfer of the refund payment by said tax collection authority; and

g) program means executable by said at least one data processing means for electronically closing said electronic deposit account file after payment of the tax refund amount to the taxpayer.

5,193,058

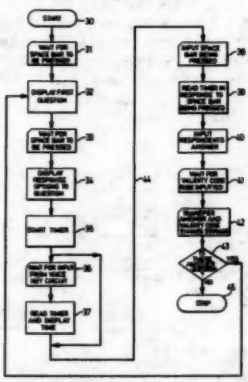
METHOD AND APPARATUS FOR THE MEASUREMENT OF RESPONSE TIME IN ATTITUDE SURVEY RESEARCH

John N. Bassili, and Joseph F. Fletcher, both of Toronto, Canada, assignors to Arkelon Research, Streetsville, Canada

Filed Oct. 26, 1990, Ser. No. 603,645

Int. Cl.[5] G06F *15/38*; G09B *5/04, 7/00*; H04N *7/00*

U.S. Cl. 364—419 **6 Claims**



1. An apparatus for use by an interviewer in conducting a survey of a person, the apparatus comprising:

(a) a means for displaying a menu of questions to be asked by the interviewer, said means for displaying including timing means and comprising a computer having a central processing unit, a disk drive, a data entry keyboard and a video display unit, and said computer including means for providing question prompts to the interviewer asking questions of the person being surveyed, by displaying said question prompts on the video display unit;

(b) a means for initiating said timing means upon completion of the question, said means for initiating being coupled to said means for displaying, and said means for displaying being responsive to said means for initiating;

(c) a means for detecting an audio response from the person being surveyed, and converting said audio response into an electronic control signal which stops the timing means, said means for detecting and converting being coupled to said means for displaying;

(d) said means for initiating said timing means upon completion of said question being responsive to a manual input from the interviewer and an electronically activated input for generating a control signal for initiating said timing means in response to one of said manual and electronic activated inputs; and

(e) said means for displaying, determining and recording a response time of the person being surveyed being based on the initiating and stopping of said timing means.

5,193,059

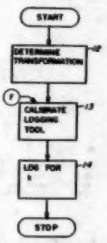
METHOD FOR IDENTIFYING AND CHARACTERIZING HYDRAULIC UNITS OF SATURATED POROUS MEDIA: TRI-KAPPA ZONING PROCESS

Djebbar Tiab, Norman, Okla.; David M. Marschall, Sugar Land, and Mehmet H. Altunbay, Houston, both of Tex., assignors to Western Atlas International Inc., Houston, Tex.

Continuation of Ser. No. 534,458, Jun. 6, 1990, abandoned. This application Oct. 28, 1991, Ser. No. 784,641

Int. Cl.[5] G01V *1/00*

U.S. Cl. 364—422 **13 Claims**



1. A method for logging a formation for permeability, comprising:

(a) defining geologic units of the formation based on analysis of core material from the formation;

(b) obtaining plugs from the core material, wherein selection of the plugs is based on the geologic units definition;

(c) determining a first set of hydraulic unit characterization factors based on core analysis of the plugs;

(d) identifying hydraulic units distributed within the geologic units based on the first set of hydraulic unit characterization factors;

(e) selecting a plurality of test samples of core material, wherein the selection is based on the hydraulic units distribution;

(f) determining a second set of hydraulic unit characterization factors based on core analysis of the test samples;

(g) determining a dynamic correlation between logging measurements and core analysis measurements of the formation based on the second set of hydraulic unit characterization factors;

(h) calibrating a logging tool based on the correlation; and

(i) logging a well in the formation with the calibrated logging tool to produce a permeability log of the formation.

5,193,060

METHOD OF HOLD-SPEED CONTROL DURING AN UPSHIFT

Maurice B. Leising, 877 Key West Dr., Clawson, Mich. 48017, and Gerald L. Holbrook, 866 Downhill La., Rochester Hills, Mich. 48063

Filed May 12, 1989, Ser. No. 351,895

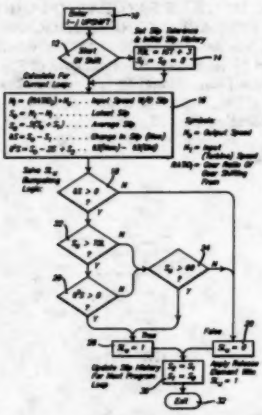
Int. Cl.[5] B60K *41/04*

U.S. Cl. 364—424.1 **2 Claims**

1. In a vehicle having a transmission including an input member, an output member, a gear assembly for changing a ratio of torque between said input member and said output member, a plurality of friction elements for shifting said gear

assembly, a plurality of input sensors for providing signals indicative of a current slip of said transmission, and a controller having memory for processing and storing said signals, storing predetermined slip conditions and providing output signals, a method of controlling a hold-speed during an upshift of said gear assembly to enable said transmission to rapidly respond to dynamic slip condition of a start of the transmission upshift, said method comprising the steps of:

(a) determining whether said transmission is at the start of said upshift;



(b) if said transmission is determined to be at the start of said upshift, calculating the magnitudes of current slip parameters including a slip between said input and said output members of said transmission, an average slip, a change in slip and a change in the change in slip;

(c) comparing the magnitudes of said current slip parameters against said predetermined slip conditions; and

(d) reapplying at least one of said friction elements of said transmission if certain of said current slip parameters satisfy said predetermined slip conditions.

5,193,061

SLIP CONTROL MECHANISM OF A MOTOR VEHICLE

Toshiaki Tsuyama, Higashi-Hiroshima; Kazutoshi Nobumoto, Hiroshima; Fumio Kageyama, Hiroshima; Akira Sone, Hiroshima, and Makoto Kawamura, Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Dec. 4, 1990, Ser. No. 621,963

Claims priority, application Japan, Dec. 6, 1989, 1-317073

Int. Cl.[5] B60T *8/32*

U.S. Cl. 364—426.02 **4 Claims**

1. A slip control mechanism of a motor vehicle having driving wheels comprising:

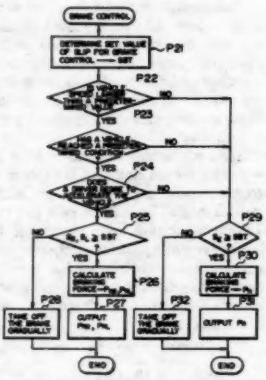
brake means for applying a braking force to each driving wheel;

first detection means for detecting slip of each driving wheel;

second detection means for detecting when a predetermined condition has been met during a starting period of said vehicle; and

slip control means for determining which driving wheel has a larger slip value and operating the brake means so that each driving wheel is provided with braking force when an excessive slip is detected, based on signals from the first detection means, to thereby eliminate such excessive slip;

said slip control means controlling the braking force applied by the brake means for respective driving wheels, based on said larger slip value, so that substantially the same amount of braking force is applied to the driving wheels when said second detection means detects that the predetermined condition is not met, and controlling the brake means for the respective driving wheels independently in



accordance with signals from the first detection means when said second detection means detects that the predetermined condition is met.

5,193,062

AUTOMATIC VEHICLE DRIVING SYSTEM AND METHOD OF DRIVING THE SAME ON CHASSIS DYNAMOMETER

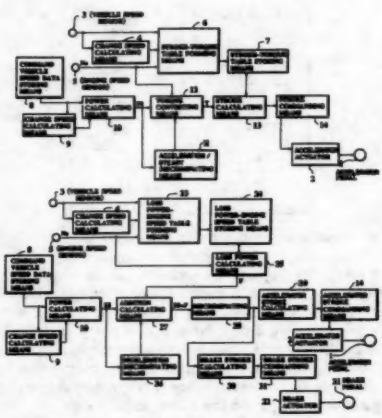
Isao Murase, and Akira Shimozono, both of Yokosuka, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jan. 29, 1991, Ser. No. 647,025

Claims priority, application Japan, Feb. 7, 1990, 2-28009

Int. Cl.[5] G06F *15/20*

U.S. Cl. 364—426.04 **15 Claims**



1. An automatic vehicle driving system on a chassis dynamometer, comprising:

(a) means for sensing engine speed;

(b) means for sensing vehicle speed;

(c) means for calculating vehicle change speed on the basis of sensed vehicle speed;

(d) means for actuating an accelerator pedal;

(e) means for forming a table indicative of a relationship between accelerator actuator stroke and engine output

torque on the basis of the sensed engine speed, the sensed vehicle speed, and the calculated vehicle change speed;
(f) means for storing the formed stroke-torque table;
(g) means for storing command vehicle speed data;
(h) means for calculating command vehicle change speed;
(i) means for calculating necessary power to drive a vehicle at the command vehicle speed and the command vehicle change speed;
(j) means for discriminating whether the vehicle must be accelerated or kept at steady speed on the basis of the calculated necessary power;
(k) means for converting the calculated necessary power into an engine output torque according to the sensed engine speed when the vehicle must be accelerated or kept at steady speed;
(l) means for calculating an accelerator actuator stroke required to generate the converted engine output torque with reference to the stroke-torque table formed by said stroke-torque forming means; and
(m) means for controlling said accelerator pedal actuating means responsive to the calculated accelerator actuator stroke.

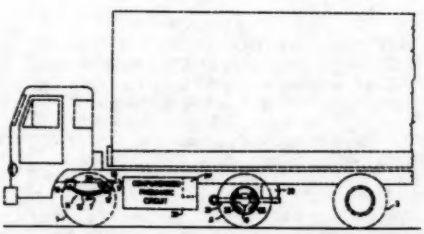
4. A method of driving a vehicle on a chassis dynamometer, comprising the steps of:
(a) reading actual engine speed and actual vehicle speed;
(b) reading a stored command vehicle speed and calculating a change speed on the basis of the command vehicle speed;
(c) calculating a necessary power PS with reference to a stored vehicle speed-steady travel power table;
(d) calculating an engine friction loss power F with reference to a stored friction loss power-engine speed table;
(e) calculating an addition PS+F of the calculated necessary power and the calculated friction power;
(f) checking whether the calculated addition is equal to or more than zero PS+F≧0;
(g) if equal to or more than zero, determining that vehicle speed can be decelerated by only engine brake;
(h) checking whether the calculated necessary power is equal to or more than zero PS≧0;
(i) if equal to or more than zero, determining that vehicle speed must be accelerated or kept at steady speed;
(j) converting the necessary power PS into an engine output torque T according to the current engine speed;
(k) calculating an accelerator actuator stroke with reference to a stored stroke-torque table; and,
(l) outputting a calculated command accelerator actuator stroke to an accelerator actuator.

5,193,063

VEHICLE AXLE CONTROL SYSTEM

Daniel Assh, 1155 Turnbull, Quebec, P.Q., Canada G1R 5G3

Continuation-in-part of Ser. No. 383,012, Jul. 21, 1989, Pat. No. 5,025,877. This application May 4, 1990, Ser. No. 518,718
Int. Cl.[5] B62D *61/12*
U.S. Cl. 364—424.05 **24 Claims**



1. In a control system for deploying or applying load to an auxiliary axle on a wheeled vehicle having a chassis frame, said frame being mounted through axle suspension means on at least two non-deployable axles, at least one of said non-deployable axles serving as a principal axle from which the load on said principal axle is measured and the total vehicle load is determined, said vehicle having further an auxiliary axle, wherein:
(a) said auxiliary axle is coupled to the chassis frame by an adjustable auxiliary axle suspension that permits such axle to be retracted to an inactive, raised position out of contact with the ground, and to be deployed by being lowered to a load-bearing position in contact with the ground; and wherein
(b) said adjustable suspension is capable of deploying said auxiliary axle in a controlled manner so as to share a variable proportion of the total load of the vehicle being carried by all of its axles;
said vehicle further comprising:
(c) load sensing means for providing on a repetitive basis over time, while said vehicle is in motion, in the form of load signals, sample measurements of the momentary load carried by the principal axle;
(d) first control means for deploying said auxiliary axle when the load on said principal axle as determined from said load sensing means is above a predetermined drop-point value;
(e) second control means for retracting said auxiliary axle when the load on said principal axle as determined by said load sensing means is below a predetermined lift-point value;
(f) third control means for controlling, in response to said load signals, the load carried by the auxiliary axle once it is deployed;
the improvement comprising:
(g) fourth control means connected to receive said load signals from said load sensing means and connected to said first, second and third control means for activation of at least one of said first, second or third control means by sending thereto an activation signal derived by processing said load signals by the comparison by said fourth control means of:
(i) a time-averaged value for a series of sample load signals taken while said vehicle is in motion; with
(ii) predetermined load signal values provided to said fourth control means for effecting actuation of said first, second and third control means.

5,193,064

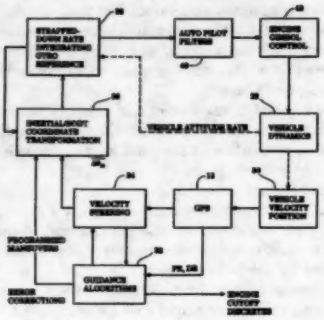
METHOD AND APPARATUS OF INTEGRATING GLOBAL POSITIONING SYSTEM AND INERTIAL NAVIGATION SYSTEM WITHOUT USING ACCELEROMETERS

Stanley C. Maki, Poway, Calif., assignor to General Dynamics Corporation, Space Systems Division, San Diego, Calif.

Filed Oct. 9, 1990, Ser. No. 594,894
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—454 **5 Claims**

1. A guidance system for a flying vehicle which includes:
means to sense from the dynamics of the flying vehicle information relating to the position and the velocity of the vehicle;
a GPS means responsive to the position and velocity information to provide velocity and position vectors and components of the velocity vector;
a guidance algorithm means responsive to the current position and velocity vectors of the vehicle to provide certain steering information and to provide a velocity vector to be gained;
a velocity steering means responsive to the velocity vector to be gained provided by the guidance algorithm means

and to components of the velocity vector provided by the GPS to generate a steering rate vector, and



means responsive to the steering rate vector provided by the velocity steering means to adjust accordingly the attitude of the flight vehicle.

5,193,065

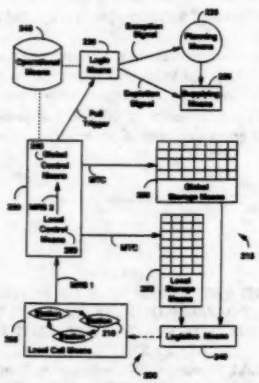
SYSTEM FOR REQUISTIONING AND DISTRIBUTING MATERIAL IN A MANUFACTURING ENVIRONMENT

Pierre C. Guerindon, Peoria, and Jon E. Barrow, Naperville, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Dec. 3, 1990, Ser. No. 621,662

Int. Cl.[5] G06F *15/46*

U.S. Cl. 364—468 **49 Claims**



28. A method for requisitioning and distributing material in a manufacturing environment, wherein the manufacturing environment includes a local manufacturing station adapted to utilize the material, a local storage unit adapted to store the material, and a logistics unit adapted to move the material, comprising the steps of:

utilizing said stored material and producing a first missing resource signal in response to the amount of material in said local storage unit being equal to a predetermined minimum value;

receiving said first missing resource signal, responsively searching said local storage unit, producing a material transfer command signal in response to the presence of said material, and producing a pull trigger signal in response to the absence of said material;

producing a material schedule; and

receiving said pull trigger signal and said material schedule, and producing a depletion signal in response to said pull trigger signal and said material schedule.

5,193,066

EQUIPMENT FOR ADJUSTING THE SHAPE OF A RUNNING BAND-LIKE OR PLATE-LIKE METAL MATERIAL IN THE WIDTH DIRECTION

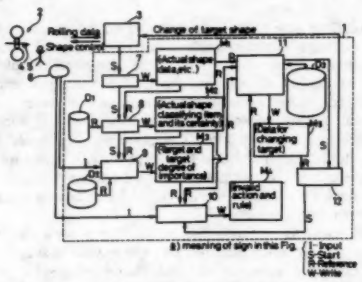
Masami Konishi, Kobe; Hiroshi Narazaki, Amagasaki; Toshiharu Iwatani, Kobe; Kazuo Nose, Kobe; Takashi Sato, Kobe; Hiroo Oshima, Kobe; Soichi Kitagawa, Kobe, and Hazime Tubono, Itami, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Mar. 14, 1990, Ser. No. 493,471

Claims priority, application Japan, Mar. 14, 1989, 1-62654; Mar. 14, 1989, 1-62657; Mar. 14, 1989, 1-62658; May 2, 1989, 1-113171; Sep. 29, 1989, 1-256666; Mar. 9, 1990, 2-58819; Mar. 13, 1990, 2-62219; Mar. 13, 1990, 2-62220; Mar. 13, 1990, 2-62221; Mar. 13, 1990, 2-62222

Int. Cl.[5] G06F *15/46*; B21B *37/00*

U.S. Cl. 364—472 **13 Claims**



1. A target shape adjusting apparatus for adjusting the shape in the width direction of a moving band-like or plate-like metal material, said apparatus comprising:

a shape controlling section for controlling an actual shape of the metal material in the width direction thereof, said shape controlling section being responsive to target shape data supplied thereto, said shape controlling section including means for selectively cooling a portion of said metal material;

a sensor for detecting actual shape data representing said actual shape;

experience value memorizing means for memorizing experience values, said experience values representing changes of the actual shape corresponding to previous changes of the target shape data; and

operating means for preparing the target shape data on the basis of the actual shape data and the experience values, said operating means being adapted to output the target shape data to the shape controlling section.

5,193,067

BATTERY CONDITION DETECTON APPARATUS

Hirohide Sato, Toyokawa, and Yoshiya Hatakeyama, Joyo, both of Japan, assignors to Nippondenso Co., Ltd., Kariya and Japan Storage Battery, Kyoto, both of Japan

Filed Dec. 4, 1989, Ser. No. 444,873

Claims priority, application Japan, Dec. 5, 1988, 63-307243; Dec. 15, 1988, 63-317164; Aug. 1, 1989, 1-199896

Int. Cl.[5] G01N *27/46*

U.S. Cl. 364—483 **8 Claims**

1. An apparatus which detects a condition of a battery which operates using a reactive substance in an electrolyte thereof, said apparatus comprising:

a battery voltage detector for detecting a voltage of the battery and providing a battery voltage signal;

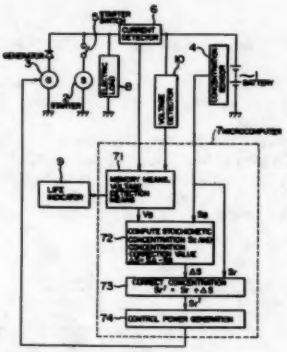
a battery current detector, connected in a battery discharge

path, for detecting a discharge current of said battery and providing a battery current signal;

a battery electrolyte concentration detector for detecting a value representing a concentration of the reactive substance in the electrolyte of the battery and providing a battery electrolyte concentration signal;

memory means for storing a standard characteristic representing a standard value of the concentration of the reactive substance in the electrolyte of said battery at a time when said battery current signal reaches a predetermined value, as a function of one of a voltage and an internal resistance of said battery;

computation means for receiving said battery voltage signal provided by said battery voltage detector at a time when said battery current signal reaches the predetermined value, and for obtaining a value representing the standard concentration of the reactive substance in said battery



using a value of the voltage of said battery or a value of the internal resistance to obtain the standard characteristic stored in said memory means, the value thus obtained being outputted as a standard concentration value;

correction value computation means for receiving said battery electrolyte concentration signal provided by said battery electrolyte concentration detector, at a time near when said computation means receives said battery voltage signal and for computing a concentration correction value on the basis of said battery electrolyte concentration signal and the standard concentration value inputted from said computation means; and

correction means for correcting said battery electrolyte concentration signal provided by said battery electrolyte concentration detector by using the concentration correction value obtained by said correction value computation means to provide a corrected battery electrolyte concentration signal.

5,193,068

METHOD OF INDUCING OFF-CIRCUIT BEHAVIOR IN A PHYSICAL MODEL

Sergiu A. Britman, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Oct. 1, 1990, Ser. No. 590,832

Int. Cl.[5] G06F *11/00, 15/20*

U.S. Cl. 364—578 **6 Claims**

1. In a simulation system which produces digital input patterns for input to a model of a complex digital device, the operation of the device being modelled within the simulation system by the method steps of:

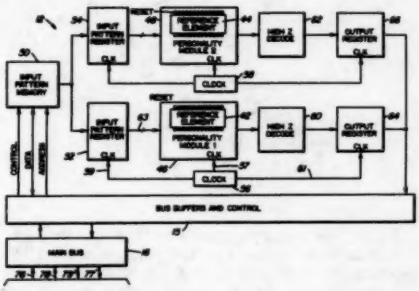
a) presenting a first sequence of the digital input patterns to a reference element which is a physical specimen of the complex digital device to produce a digital output pattern, wherein the presenting step occurs at a clock rate which differs from the rate at which the digital input patterns are produced by the simulation system;

b) sampling the digital output pattern after the first sequence of the digital input patterns has been presented to the complex digital device;

c) allowing the simulation system to respond to the digital output pattern in (b) to produce the next one of the digital input patterns;

d) storing the next one of the digital input patterns in succession with the first sequence of the digital input patterns to produce a second sequence of the digital input patterns;

e) resetting the reference element independent of operation of the simulation system; and



f) repeating steps (a) through (e), the second sequence becoming the first sequence;

a method of inducing off-circuit behavior of the complex digital device, the method comprising the ordered steps of:

i) after performing step (b) above, storing an off-circuit digital input sequence in succession with the first sequence to produce a mixed sequence;

ii) resetting the reference element independent of operation of the simulation system;

iii) presenting the mixed sequence to the reference element; and

iv) sampling the digital output pattern resulting from the presentation of the mixed sequence.

5,193,069

PORTABLE COMPUTER TO WHICH DIFFERENT TYPES OF FLAT DISPLAY PANELS CAN BE ATTACHED

Seiichi Furuya, Fussa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 514,027, Apr. 27, 1990, abandoned. This application Jan. 31, 1992, Ser. No. 829,628

Claims priority, application Japan, Apr. 28, 1989, 1-51217[U]

Int. Cl.[5] G06F *1/00*

U.S. Cl. 364—708 **6 Claims**

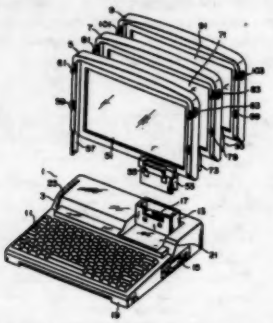
1. A portable computer system comprising:

a base unit including a keyboard, a power supply for supplying a standard voltage, a display controller for supplying standard display data, and a first connector electrically coupled to the power supply and the display controller for receiving the standard voltage and the standard display data;

a first display unit removably connecting to the base unit, the first display unit including a second connector removably and electrically connecting to the first connector, a first flat panel display module, and a first converter circuit comprising a first voltage converter circuit for automatically converting the standard voltage supplied by the power supply through the first and second connectors into a first inherent voltage for driving the first flat panel display module and a first data converter circuit for automatically converting the standard display data supplied by

the display controller through the first and second connectors into first inherent display data for use by the first flat panel display module; and

a second display unit removably connecting to the base unit in place of the first display unit, the second display unit comprising a third connector removably and electrically connecting to the first connector, a second flat panel display module, and a second converter circuit comprising one of a second voltage converter circuit for automatically converting the standard voltage supplied by the power supply through the first and third connectors into a second inherent voltage for driving the second flat panel display module and a second data converter circuit for automatically converting the standard display data supplied by the display controller through the first and third connectors into second inherent display data for use by the second flat panel display module.

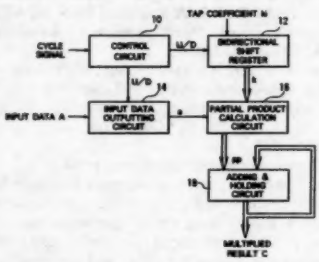


5,193,070

TRANSVERSAL FILTER CIRCUIT HAVING TAP CIRCUITS INCLUDING BIDIRECTIONAL SHIFT REGISTERS FOR SERIAL MULTIPLICATION

Shigeshi Abiko, Tokyo, and Shoji Saiki, Yokohama, both of Japan, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 15, 1991, Ser. No. 700,725
Int. Cl.[5] G06F *15/31*
U.S. Cl. 364—724.16 **7 Claims**



1. A transversal filter circuit comprising a plurality of tap circuits, each including a serial multiplication circuit having

a bidirectional shift circuit for shifting a tap coefficient by a predetermined number of bits in one of two directions,

a data input circuit for containing input data and providing the input data as an output in accordance with a predetermined pattern,

a partial product calculation circuit respectively operably connected to the outputs of said bidirectional shift circuit and said data input circuit for calculating a partial product of said tap coefficient output from said bidirectional shift circuit and said input data as output from said data input circuit,

an adding and holding circuit operably connected to the output of said partial product calculation circuit for adding an output from said partial product calculation circuit to a previously added value and holding the added output, and

a control circuit operably connected to said bidirectional shift circuit and to said data input circuit and providing a control signal as an input thereto for controlling the shift direction of said bidirectional shift circuit and the data output direction of said data input circuit by alternatively changing the shift direction at each successive operation cycle,

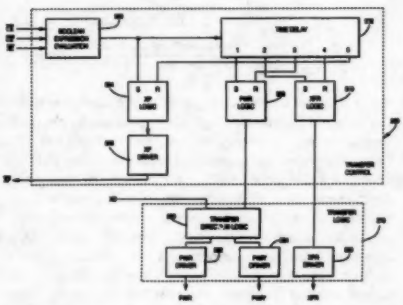
said serial multiplication circuit consecutively calculating and adding the partial product of a next tap coefficient and the input data for a plurality of times defined by a bit number of said input data, within each operation cycle.

5,193,071

MEMORY APPARATUS FOR MULTIPLE PROCESSOR SYSTEMS

Leonard J. Umina, Marlboro, and Robert A. Anselmo, Stow, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 696,738, May 7, 1991, abandoned, which is a division of Ser. No. 288,168, Dec. 22, 1988, Pat. No. 5,031,146. This application Mar. 3, 1992, Ser. No. 844,883
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—189.01 **5 Claims**



1. A memory storage cell constructed in a single integrated circuit substrate, comprising:

a first memory cell for retrievably storing a bit value;

a second memory cell for retrievably storing a bit value;

I/O means for making each of said first and second memory cells accessible for read and write operations independent of access to said second and first memory cells, respectively, for read and write operations;

a control element, operatively coupled between said first and second memory cells and respective to a transfer control signal, for copying the bit value stored in a sending one of said first and second memory cells to a receiving one of said first and second memory cells; and

first and second power supply lines coupled to said first and second memory cells, respectively, to maintain bit value storage, said first and second power supply lines providing adjustable power levels to said first and second memory cells, respectively;

wherein said control element further comprises

means, responsive to said transfer control signal, for providing a conductive path between said first and second memory cells in response to said transfer control signal; and

wherein the power supply power level to the receiving

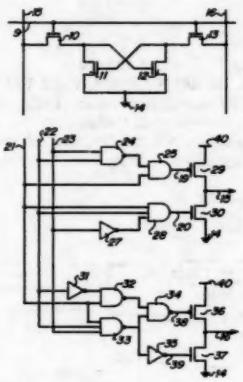
memory cell is reduced when said transfer control signal causes said control element to provide said conductive path, thereby copying the bit value stored in the sending memory cell into the receiving memory cell.

5,193,072

HIDDEN REFRESH OF A DYNAMIC RANDOM ACCESS MEMORY

Gerald L. Frenkil, Brookline, and Steven E. Golson, Carlisle, both of Mass., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Dec. 21, 1990, Ser. No. 631,618
Int. Cl.[5] C11C *11/40*
U.S. Cl. 365—222 **19 Claims**



1. A random access memory having a plurality of memory cells which are refreshed responsive to a clock signal, the clock signal having a clock cycle and the random access memory comprising:

address selection means, coupled to the plurality of memory cells, for selecting a first subset of the plurality of memory cells for data access;

refresh selection means, coupled to the plurality of memory cells, for selecting a second subset of the plurality of memory cells to be refreshed; and,

refresh means, coupled to the plurality of memory cells, for, during a first segment of the clock cycle, refreshing data stored in the first subset of the plurality of memory cells selected by the address selection means and for, during the first segment of the clock cycle, refreshing data stored in the second subset of the plurality of memory cells selected by the refresh selection means;

wherein a data access to the first subset of the plurality of memory cells is performed in a second segment of the clock cycle, the second segment of the clock cycle occurring after the first segment of the clock cycle.

5,193,073

ON CHIP VOLTAGE REGULATOR FOR COMMON COLLECTION MATRIX PROGRAMMABLE MEMORY ARRAY

Rohit L. Bhuva, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 820,286, Jan. 17, 1986. This application May 2, 1988, Ser. No. 166,960
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—226 **8 Claims**

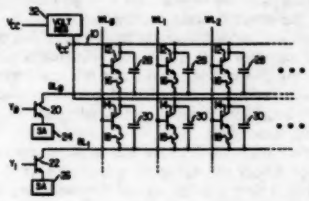
5. A transient immune memory matrix in a memory chip, comprising:

an external supply line for supplying voltage to the chip;

a matrix supply line;

isolation means disposed between said external supply line and said matrix supply line for supplying a constant voltage to said matrix supply line lower than the voltage on said supply line, said isolation means isolating said matrix supply line from voltage transients on said external supply line;

a matrix of common collector memory cells arranged in rows and columns and connected on one side to said



matrix supply line, each memory cell having a first or second logic state; and

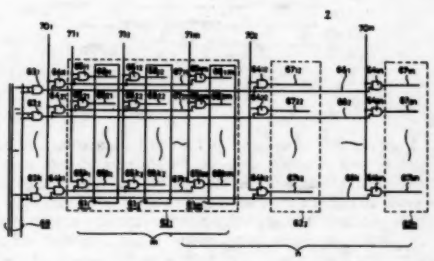
means for selectively connecting each of said memory cells to an external current sink such that selection of one of said memory cells causes current to flow from said matrix supply line through said selected memory cell and to the external current sink.

5,193,074

SEMICONDUCTOR MEMORY DEVICE HAVING HIERARCHICAL ROW SELECTING LINES

Kenji Anami, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 28, 1991, Ser. No. 646,910
Claims priority, application Japan, Feb. 9, 1990, 2-30837
Int. Cl.[5] G11C *8/02*
U.S. Cl. 365—230.03 **40 Claims**



1. A semiconductor memory device comprising:

a memory cell array formed of a plurality of memory cells arranged in matrix and each including one transistor and one capacitor; wherein said memory cell array is divided in the direction of columns into a plurality of large groups of memory cells, and each of said plurality of large memory cell groups is further divided in the direction of columns into a plurality of small groups of memory cells, said semiconductor memory device further comprising:

a plurality of first row-selecting lines provided in said memory cell array;

a plurality of second row-selecting lines provided in each of said plurality of large memory cell groups;

a plurality of word lines provided in each of said plurality of small memory cell groups and connected to said memory cells;

means for supplying a first selecting signal for selecting one of said plurality of large memory cell groups;

means for supplying a second selecting signal for selecting one of said plurality of small memory cell groups;

first decoder means responsive to an internal address signal for selecting one of said first row-selecting lines to activate the selected first row-selecting line;

a plurality of second decoder means provided in each said large memory cell group for selecting a second row-selecting line associated with said selected first row-selecting line to activate the selected second row-selecting line in the large memory cell group selected by said first selecting signal; and

a plurality of third decoder means provided in each said small memory cell group for selecting a word line associated with said selected second row-selecting line to activate the selected word line in the small memory cell group selected by said second selecting signal.

5,193,075

STATIC MEMORY CONTAINING SENSE AMP AND SENSE AMP SWITCHING CIRCUIT

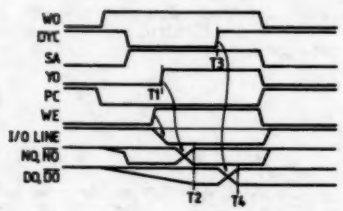
Susumu Hatano; Kanji Oishi; Takashi Kikuchi; Yasuhiko Saigou; Hiroshi Fukuda; Kunio Uchiyama; Hirokazu Aoki, and Osamu Nishii, all of Tokyo, Japan, assignors to Hitachi Ltd. and Hitachi VLSI Engineering Corp., both of Tokyo, Japan

Filed Mar. 8, 1990, Ser. No. 490,745

Claims priority, application Japan, Mar. 8, 1989, 1-55938

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—233 **7 Claims**



1. A method of reading and writing data from and to a memory cell which is connected by a pair of data lines to input/output lines, wherein the memory cell is associated with a sense amplifier connected between the pair of data lines for sensing and amplifying a voltage difference between the pair, a first switching means between the sense amplifier and the memory cell and a second switching means between the sense amplifier and the input/output lines, the method comprising the steps of:

for a reading operation;

opening the second switching means in preparation for the read operation;

as the sense amplifier commences a reading sense operation of a first voltage difference across the data lines, opening the first switching means;

continuing the reading sense operation with the sense amplifier disconnected from both the memory cell and the input/output lines;

a first predetermined time after commencement of the reading sense operation, closing the second switching means to convey a sense amplifier output to the input/output lines; and,

for a writing operation:

opening the first switching means in preparation for the writing operation;

closing the second switching means;

commencing a writing sense operation of a second voltage difference across the data lines by the sense amplifier;

continuing the writing sense operation of the voltage difference across the data lines with the sense amplifier disconnected from the memory cell;

a second predetermined time after the commencing of the writing sense operation, closing the first switching means to convey an output of the sense amplifier to the memory cell.

5,193,076

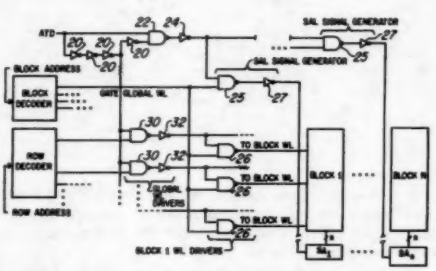
CONTROL OF SENSE AMPLIFIER LATCH TIMING

Theodore W. Houston, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 288,399, Dec. 22, 1988, abandoned. This application Jan. 28, 1991, Ser. No. 647,615

Int. Cl.[5] G11C *8/00*

U.S. Cl. 365—233.5 **6 Claims**



1. A static random access memory timing system for a static random access memory comprising:

at least one row and one column of memory cells,

a plurality of bit lines,

at least one word line,

circuitry for controlling a bit line precharge and equalization signal, and row address detection circuitry connected by a plurality of logic gates to at least one latching sense amplifier, to said circuitry for controlling said bit line precharge and equalization signal and to said at least one word line;

said at least one latching sense amplifier associated with a pair of said plurality of bit lines, wherein the memory is operable such that said bit line precharge and equalization signal is turned on when an address transition is detected by said row address detection circuitry and simultaneously an adequate differential voltage which said sense amplifier can latch is driven on said associated pair of bit lines and such that said at least one latching sense amplifier is timed to latch after said bit line precharge and equalization signal is turned off, wherein said bit line precharge and equalization signal is turned off after the establishment of said adequate differential voltage on said associated pair of bit lines, and wherein a signal controlling the latching of said latching sense amplifier originates from said bit line precharge and equalization signal, said bit line precharge and equalization signal originating from a chain of logic processing on a row address transition detection circuit signal.

5,193,077

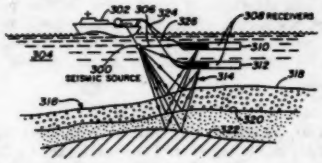
METHOD AND APPARATUS FOR IMPROVED SEISMIC PROSPECTING

Arthur B. Weiglein, Grapevine; Timothy H. Kebo, Plano, and Bruce G. Secrest, Houston, all of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif. and BP Exploration Inc., Houston, Tex.

Continuation of Ser. No. 351,454, May 15, 1989, abandoned. This application Oct. 2, 1990, Ser. No. 593,518

Int. Cl.[5] G01V *1/28, 1/38*

U.S. Cl. 367—23 51 Claims



1 (four times amended). A method of operating a computer to determine a source signature from recorded signals related to detected changes in a medium in response to an input from a seismic source, comprising the steps of:

activating a seismic source to generate a source wavelet in a medium;

detecting changes associated with said source wavelet in said medium at two vertically offset positions;

converting said detected changes in said medium to signals related to said detected changes;

storing, in computer readable form, data corresponding to said [recorded] signals;

processing said stored data to generate a plurality of wavelet estimations by performing extrapolations for a plurality of distances from said source in the same direction; and

statistically combining said plurality of wavelet estimations to determine said source signature.

5,193,078

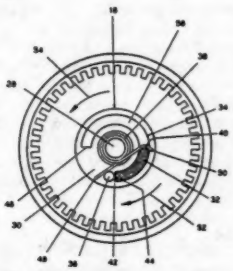
UNI-DIRECTIONAL ROTATION DEVICE FOR A CAM-OPERATED TIMER

David E. Zink, and Daniel K. Amonett, both of Indianapolis, Ind., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Feb. 18, 1992, Ser. No. 836,700

Int. Cl.[5] G04F *8/00;* H01H *43/14*

U.S. Cl. 368—107 5 Claims



1. A cam-operated timer comprising:

(a) a cam means,

(b) a shaft means providing a rotational axis for said cam means, and

(c) a coupling-decoupling means selectively engaging said shaft means to said cam means in response to rotation of said shaft means in a predetermined direction comprising:

(1) a semi-circular tang protruding from said cam means,

(2) a semi-circular slot integral to said shaft means wherein said semi-circular tang is placed,

(3) a spring stop post attached to said shaft means, and

(4) a torsion spring having one end engaging said semi-circular tang and one end engaging said spring stop post.

5,193,079

COMPACT DISK CHANGER

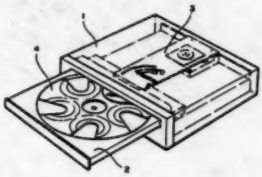
Moon-Bai Ko; Chai-Il Lee, and Kwang-Lim Park, all of Seoul, Rep. of Korea, assignors to Inkel Corporation, Rep. of Korea

Filed Sep. 9, 1991, Ser. No. 758,982

Claims priority, application Rep. of Korea, Dec. 29, 1990, 90-21831[U]; Dec. 29, 1990, 90-21832[U]; Dec. 29, 1990, 90-21833[U]; Dec. 29, 1990, 90-22534

Int. Cl.[5] G11B *17/22*

U.S. Cl. 369—37 4 Claims



1. A front loading type compact disk changer which can load or replace a plurality of compact disks by drawing out a tray from a housing, comprising:

a tray feeding and locking pinion drum in which a pinion for feeding the tray to the outside and inside by being engaged with a rack formed on the lower surface of the tray has a semicircular wall part for locking the tray by being engaged to a stopper on the lower surface of the tray when the retracting operation of the tray is completed;

a CD double insertion preventing device composed of a fixed plate fixed on the upper inner surface of the housing and a rotating plate pivotably connected to the front of the fixed plate, for preventing a new CD from being inserted into a CD inserting portion when one of plural CDs is played; and

a plurality of protrusions disposed in a single line on the lower surface of a roulette for generating a specific CD selecting signal and a roulette stopping signal in cooperation with a single sensor.

5,193,080

MAGNETO-OPTICAL RECORDING MEDIUM AND APPARATUS

Masanari Mohri, Katano; Osamu Mizuno, Osaka, and Tohru Nakamura, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 3, 1990, Ser. No. 547,154

Claims priority, application Japan, Jul. 6, 1989, 1-174712

Int. Cl.[5] G11B *17/00, 11/00*

U.S. Cl. 369—244 4 Claims

1. A magneto-optical recording and reproducing apparatus comprising:

an optical head for forming an optical spot on a magneto-optical recording medium;

first driving means for moving the optical head while maintaining a predetermined gap to the magneto-optical recording medium;

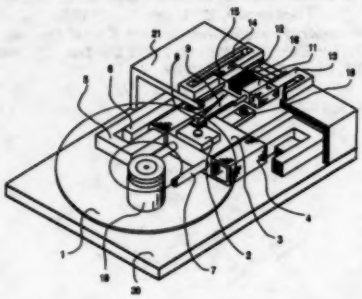
a magnetic bias field generator disposed at a position opposite to the optical head across the magneto-optical recording medium for generating a magnetic field in an area of the magneto-optical recording medium in which the optical spot is formed;

second driving means for moving the magnetic bias field generator in the same direction as a moving direction of the optical head;

detecting means for detecting a relative positional relationship between the optical head and the magnetic bias field generator and outputting a detection signal indicative of the relative positional relationship; and

control means responsive to the detection signal from the detecting means for controlling positions of the optical head and magnetic bias field generator to obtain a predetermined relative positional relationship therebetween,

position initializing means for initializing a position of the



magnetic bias field generator to a reference position relative to the magneto-optical recording medium, wherein said control means controls said first driving means to move the optical head to be in the predetermined relative positional relationship to the magnetic bias field generator.

5,193,081

TRACK-ACCESSING CONTROLLER FOR OPTICAL DISKS

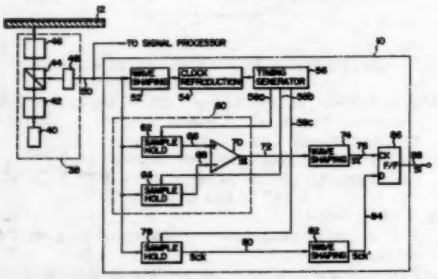
Hideaki Osawa, and Naobumi Seo, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 28, 1990, Ser. No. 486,385

Claims priority, application Japan, Feb. 28, 1989, 1-47256; Sep. 28, 1989, 1-250669

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—44.26 **13 Claims**



1. An optical disk apparatus for a rotatable optical disk which is formatted to have in a selected region of each track defined thereon, a clock pit positioned at a center of a corresponding track and first and second wobbled pits respectively formed on both sides of the center of the corresponding track, comprising:

(a) light-emitting means for emitting a light beam focused, by a focusing means, on the optical disk as a spot which is movable across the tracks on the optical disk;

(b) photodetector means for receiving input light of the light beam reflected from the optical disk to produce a light detection signal representing an intensity of light reflected from the clock pits and the first and second wobbled pits;

(c) clock detecting means, connected to said photodetector means, for detecting an intensity variation of the light beam reflected from the optical disk as the spot crosses the clock pits using the light detection signal, thereby producing a clock pit detection signal;

(d) tracking error detecting means, connected to said photodetector means, for detecting an intensity variation of the light beam reflected from the optical disk as the spot crosses the first and second wobbled pits using the light detection signal, thereby producing a tracking error signal representing a resultant intensity difference; and

(e) determining means, connected to said clock detecting means and said tracking error detecting means, for comparing a phase of the clock pit detection signal with a phase of the tracking error signal thereby producing a phase comparison result, and for using the phase comparison result to determine a direction in which the spot crosses some of the tracks on the optical disk.

5,193,082

OPTICAL/MAGNETIC COMPOSITE HEAD HAVING MAGNETIC AND OPTICAL HEADS IN ONE INTEGRATED UNIT

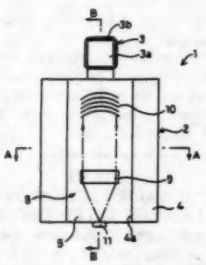
Tomoyuki Miyake, Tenri; Junichiro Nakayama, Nara; Hiroyuki Katayama, Nara; Akira Takahashi, Nara, and Kenji Ohta, Kitakatsuragi, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 29, 1990, Ser. No. 502,104

Claims priority, application Japan, Mar. 31, 1989, 1-81701

Int. Cl.[5] G11B *13/04, 7/12*

U.S. Cl. 369—112 **4 Claims**



1. An optical/magnetic composite head comprising

a floating type magnetic head that is supported in a non-contact position with regard to a rotatable recording medium and impresses a magnetic field on said recording medium so as to perform recording operations,

an optical head located on said magnetic head facing said recording medium and said optical head including

a laser beam-generating means for directing a laser beam on to said recording medium via an optical waveguide path, wherein said magnetic head and said optical head are integrated into one unit, said laser beam being directed so as to irradiate a point on said recording medium wherein said magnetic field is impressed from said magnetic head.

5,193,083

OPTICAL PICK-UP DEVICE

Naoharu Yanagawa, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed May 26, 1992, Ser. No. 888,962

Claims priority, application Japan, May 27, 1991, 3-121332

Int. Cl.[5] G11B *7/85*

U.S. Cl. 369—116 **6 Claims**

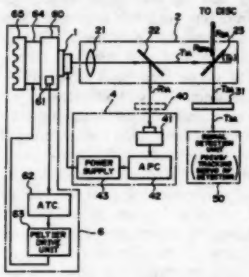
1. An optical pick-up device for irradiating a light beam onto an information recording medium to record information thereon and reproduce information therefrom, comprising:

a light source for emitting and irradiating the light beam onto the information recording medium;

light beam switch means for switching the light beams emitted from said light source between a light beam having a

recording wavelength and a light beam having a reproducing wavelength; and

light intensity change means for receiving a light beam reflected by the information recording medium and producing a transmitted light beam, said light intensity change means changing an intensity of the light beam having the recording wavelength with a first change ratio and an intensity of the light beam having the reproducing wavelength with a second change ratio.



5,193,084

DEVICE FOR ROTATING A DISC-SHAPED INFORMATION CARRIER INCLUDING A TURNTABLE AND FRAME

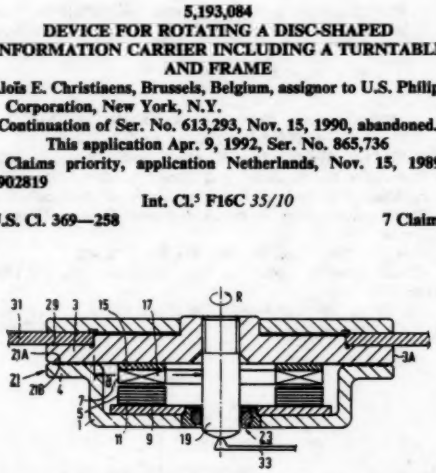
Aloïs E. Christiaens, Brussels, Belgium, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 613,293, Nov. 15, 1990, abandoned. This application Apr. 9, 1992, Ser. No. 865,736

Claims priority, application Netherlands, Nov. 15, 1989, 8902819

Int. Cl.[5] F16C *35/10*

U.S. Cl. 369—258 **7 Claims**



1. A device for rotating a disc-shaped information carrier, which device comprises a frame, a turntable which is rotatable about a shaft and is journalled relative to the frame by means of a radial bearing, the turntable having a supporting surface for the information carrier, and an electromagnetic drive unit comprising a stator section secured to the frame and a rotor section secured to the turntable, wherein the turntable and a frame portion facing the turntable are formed with facing annular bearing surfaces to form a dynamic axial bearing which is coaxial with and radially spaced from the shaft and extends parallel to the supporting surface, at least one of the bearing surfaces having at least one pattern of grooves which, as the rotor section is rotated relative to the stator section, acts to build up a pressure in a medium interposed between the bearing surfaces, said frame including an upwardly extending bowl shaped element, and wherein space is provided under the turntable and between said shaft and said upwardly extending bowl shaped element which space houses said stator section and said rotor section.

5,193,085

MAGNETO-OPTICAL RECORDING MEDIUM WITH EXCHANGE-COUPLED REPRODUCING LAYER CONTAINING PLATINUM

Klaus Harth, Altleiningen, and Hartmut Hibst, Schriesheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Sep. 17, 1991, Ser. No. 761,131

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1990, 4029874

Int. Cl.[5] G11B *13/04*

U.S. Cl. 369—275.2 **7 Claims**

1. A magnetooptical computer disk having one or more optically transparent dimensionally stable substrates and one or more double layer systems consisting of two exchange-coupled magnetic layers which consist of alloys of rare earth metals with transition metals and have vertical magnetic anisotropy, wherein the first magnetic layer adjacent to the substrate has a thickness of from 20 to 40 nm and a composition corresponding to the formula I

$$RE_xTM_{100-x-y-a}Pt_yA_a \qquad I$$

and the second magnetic layer, which is arranged on that side of the first magnetic layer which faces away from the substrate, has a thickness of 40 to 60 nm and a composition corresponding to the formula II

$$RE_uTM_{100-u-b}B_b \qquad II$$

where

Re is one or more elements from the group consisting of Gd, Tb, Dy and Ho,

TM is one or more elements from the group consisting of Fe and Co,

A and B independently of one another are one or more elements from the group consisting of Cr, Nb, Ta, Al, Si, Ni and Mo,

and

$5 \leqq x \leqq 30$,

$0.5 \leqq y \leqq 20$,

$15 \leqq u \leqq 30$,

$0 \leqq a \leqq 25$ and

$0.5 \leqq b \leqq 25$.

5,193,086

NETWORK SYSTEM HAVING A LINE SWITCHING FUNCTION

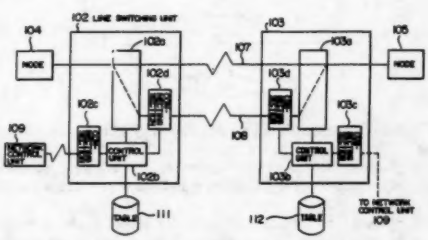
Shigeki Satomi, Tokyo, and Naoki Ono, Yokohama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 398,171, Aug. 23, 1989, abandoned. This application Oct. 21, 1991, Ser. No. 779,797

Claims priority, application Japan, Aug. 26, 1988, 63-210726

Int. Cl.[5] H04J *03/14*

U.S. Cl. 370—16 **8 Claims**



1. A network system having a plurality of nodes and a line switching function comprising:

a plurality of line switching units interconnectable by means of a communication line and a backup communication

line, each of said plurality of line switching units being connected to one of said plurality of nodes such that nodes are connected to each other via said line switching units and either of said communication line and said backup communication line; and

a network control unit connected to a first of said pair of line switching units and sending a line switching instruction subsequent to a call to said first line switching unit;

said first line switching unit comprising:

a first storage device storing a call initiator number of said network control unit; and

a controller checking during a connection sequence whether or not a call initiator number of said call from said network control unit is consistent with the call initiator number stored in the first storage device, accepting the line switching instruction when the call initiator number of said call is consistent with the call initiator number stored in said first storage device, sending the line switching instruction subsequent to a call to a second of said plurality of line switching units and switching between said communication line and said backup communication line; and

said second line switching unit comprising:

a second storage device for storing a call initiator number of said first line switching unit; and

a second controller checking during a connection sequence whether or not a call initiator number of said call from said first line switching unit is consistent with the call initiator number of said first line switching unit stored in the second storage device, accepting the line switching instruction when the call initiator number of said call from said first line switching unit is consistent with the call initiator number stored in said second storage device, and switching between said communication line and said backup communication line.

5,193,087

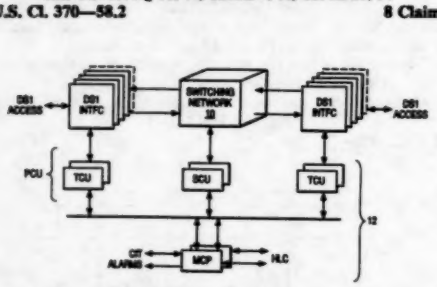
ELECTRONIC DIGITAL CROSS-CONNECT SYSTEM HAVING BIPOLAR VIOLATION TRANSPARENCY

Avi Lichtash, Ramat-Hasharon; Israel Vitelson; Zvi Huna, both of Givat'im; Reuven Markus, Petach-Tikva; Michal Nosatzki, Rishon Lezion; Baruch Gutman, Bnei-Brak; Shlomo Orbach, Haifa; Rafi Taler, Yavne; Yossi Moshe, Hertzlia; Leon Bruckman, Petach-Tikva, and Gideon Agmon, Tel-Aviv, all of Israel, assignors to Tadiran, Ltd., Petah-Tikva, Israel

Continuation-in-part of Ser. No. 524,003, May 16, 1990, abandoned. This application May 18, 1990, Ser. No. 524,930

Int. Cl.[5] H04Q *11/04;* **H03K** *7/08;* **H04L** *25/34*

U.S. Cl. 370—58.2 **8 Claims**



1. An electronic digital signal cross-connect system comprising:

a plurality of input terminals for respectively receiving bipolar 3-level input signals having a predetermined bit rate;

a plurality of output terminals for respectively providing bipolar 3-level output signals having said predetermined bit rate as outputs of said cross-connect system;

an interface circuit having an input section coupled to said input terminals to receive said plurality of bipolar 3-level input signals and having an output section coupled to said output terminals to output said bipolar 3-level output signals, wherein said input section includes means for converting said bipolar 3-level input signals into predetermined coded signals and wherein said output section includes means for converting said predetermined coded signals into said bipolar 3-level output signals;

a digital switching network having a plurality of inputs coupled to receive said predetermined coded signals from said input section of said interface circuit and having a plurality of outputs coupled to provide said predetermined coded signals to said output section of said interface circuit, wherein said digital switching network includes a plurality of switching units for coupling said plurality of inputs with said plurality of outputs; and

control means coupled to said digital switching network for controlling said switching units to couple at least a predetermined one of said inputs of said digital switching network to a predetermined one of said outputs of said digital switching network to provide a connection path through said switching matrix for at least one of said predetermined coded signals between said predetermined one of said inputs and said predetermined one of said outputs, wherein at least one of said input terminals will be cross-connected to at least one of said output terminals through said interface circuit and said digital switching network to provide a bipolar 3-level output signal at said at least one output terminal corresponding to a predetermined bipolar 3-level input signal at said at least one input terminal which bipolar 3-level output signal will include any bipolar violations which may exist in said predetermined bipolar 3-level input signal.

5,193,088

HIGH SPEED ATM CELL SYNCHRONIZING SWITCHING APPARATUS

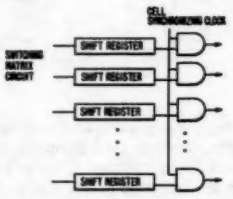
Jun K. Choi, Jungku; Mun K. Choi, Seoku; Kyung S. Kim, Yusongku; Tae S. Jeong, and Young S. Shin, both of Daedukku, all of Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon, Rep. of Korea

Filed Jun. 24, 1991, Ser. No. 720,005

Claims priority, application Rep. of Korea, Jun. 27, 1990, 1990-9576

Int. Cl.[5] H04J *3/26;* **H04L** *12/56*

U.S. Cl. 370—60 **5 Claims**



2. A high speed ATM cell synchronizing switching apparatus having a switching memory, comprising:

a system clock generating means (7) for supplying system clocks and cell synchronizing clocks;

a plurality of ATM cell inputting means (1) for receiving optical ATM signals;

a routing control means (2) connected to the plurality of said ATM cell inputting means (1) for receiving address information from the plurality of said ATM cell inputting means (1);

a cell gate means connected to both the plurality of said ATM cell inputting means (1) and said routing control means (2) for transmitting the inputted cells from the plurality of said ATM cell inputting means (1) in synchronization with the cell synchronizing clocks;

a switching information table means (4) connected to said routing control means (2) for receiving a switching table setting information and for outputting a switching control information; and

a switching matrix means (5) connected to both said switching information table means (4) and said cell gate means (3) for receiving the switching control information and for outputting a cell data information,

wherein said routing control means (2) comprises: a routing line deciding means (21) for receiving address signals I_1–I_n and routing request information R_1–R_n from said ATM cell inputting means (1); a line allocation responding means (22) connected to the routing line deciding means (21) for transmitting the line allocation information T_l to said cell gate means (3); and a switch table setting means (23) connected to the routing line deciding means (21) for transmitting the switch table allocation information X_{ij} to the switching information table means (4).

5,193,089

KEY TELEPHONE SYSTEM

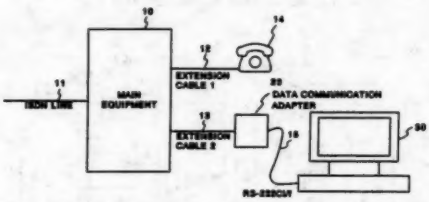
Shinji Tsuchida, Zama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 30, 1989, Ser. No. 443,151

Claims priority, application Japan, Dec. 1, 1988, 63-304666

Int. Cl.[5] H04J *3/02*; H04M *1/26*

U.S. Cl. 370—84 **13 Claims**



12. A data exchange method in a key telephone system, comprising the steps of:

receiving data at a first transmitting speed from a data terminal connected to an extension;

converting the received data into data transmitted at a second transmitting speed faster than the first transmitting speed by adding fill data to the data received from said data terminal connected to the extension; and

transmitting the converted data transmitted at said second transmitting speed to a digital line accommodated in a line wire by a controlling exchange.

5,193,090

ACCESS PROTECTION AND PRIORITY CONTROL IN DISTRIBUTED QUEUEING

Janusz Filipiak, 233 North Terrace, Adelaide, Australia 5000 ; Leslie T. Berry, and James Gordon, both of C/- Bond University Gold Coast, Queensland, 4229, Australia

PCT No. PCT/AU89/00300, § 371 Date Jun. 22, 1991, § 102(e) Date Jun. 22, 1991, PCT Pub. No. WO90/00841, PCT Pub. Date Jan. 25, 1990

PCT Filed Jul. 14, 1989, Ser. No. 490,684

Claims priority, application Australia, Jul. 15, 1988, PI9326

Int. Cl.[5] H04L *12/56*

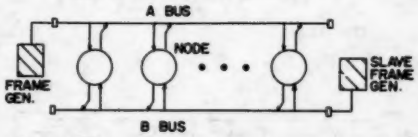
U.S. Cl. 370—94.1 **30 Claims**

1. A method of controlling the bandwidth of a communication medium useable by a station in a packet switching network having a plurality of stations coupled between first and second contra-directional communication mediums wherein the n^{th} station comprises:

a request bit counter responsive to request bits received in packets on the second communication medium from stations upstream of said n^{th} station;

a countdown counter responsive to free and occupied packets received on the first communication medium from stations downstream of said n^{th} station; and

a memory means to store a plurality of values, one of which is representative of an upper protection limit (Pmax(n)); wherein



when said request bit counter value is non-zero and a packet not addressed to said n^{th} station is received by said n^{th} station from outside said network, said method comprises the step of setting said countdown counter value equal to the lower of either said request bit counter value or Pmax(n) to control the bandwidth of the first communication medium useable by said n^{th} station.

5,193,091

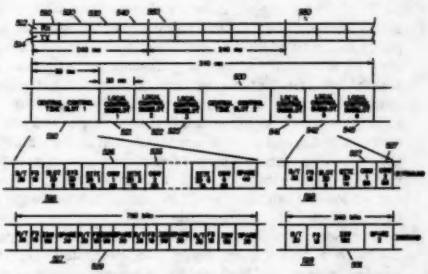
TDM COMMUNICATION SYSTEM FOR A WIDE AREA SITE AND A PLURALITY OF LOCAL SITES

Kenneth J. Crisler, Wheaton; Bradley M. Hiben, Glen Ellyn, both of Ill., and Anthony Van den Heuvel, Surry, United Kingdom, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 12, 1990, Ser. No. 626,519

Int. Cl.[5] H04Q *7/04*

U.S. Cl. 370—95.1 **13 Claims**



1. A communication system capable of communicating communication messages within a wide area site and a plurality of local sites, wherein coverage area of said local sites are substantially smaller and contained within coverage area of said wide area site, using at least one radio frequency channel divided into at least one time slot and a plurality of subslots, said subslots having substantially shorter duration than said time slot, and wherein each of said subslots is assigned to a local site, comprising:

a plurality of local site communication units operating within the coverage area of said local sites;

a plurality of wide area communication units operating within the coverage are of the wide area site;

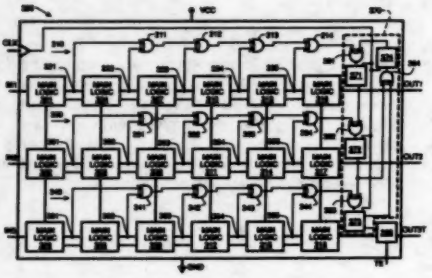
a plurality of local site communication means for communicating communication messages with at least one local site communication unit during said subslots;

a main site communication means for communicating communication messages with said local site communication means and said wide area communication unit during at least one of said time slots.

5,193,092
INTEGRATED PARITY-BASED TESTING FOR INTEGRATED CIRCUITS

Mark R. Hartoog, Los Gatos; James A. Rowson, Fremont; Robert D. Shur, Los Altos, all of Calif., and Kenneth D. Van Egmond, Tempe, Ariz., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Dec. 20, 1990, Ser. No. 632,281
Int. Cl.[5] G01R *31/28*
U.S. Cl. 371—22.4 8 Claims



1. An integrated circuit comprising:

a substrate;

logic fabricated on said substrate, said logic including main logic and test logic,

said main logic including multiple integrated circuit elements arranged to provide main outputs as a function of main inputs, said main logic including multiple test nodes coupled to respective ones of said integrated circuit elements, said test nodes including power and ground power sources;

said test logic including at least a first parity chain, said first parity chain having plural parity elements including a first parity element and a last parity element, each of said parity elements having an output and at least two inputs, each of said parity elements providing an output signal which changes whenever exactly one input signal changes, each of said parity elements but the first one having at least one input coupled to a respective one of said test nodes and another input coupled to the output of the preceding parity element of said parity chain, said first parity element having at least two inputs coupled to said test nodes, the output of said last parity element being the output of said first parity chain; and

interface means attached to said substrate for communicating with a host system when said integrated circuit is incorporated in said host system and communicating with a test system when said integrated circuit is being tested, said interface means providing for inputs of test vectors from said test system, said interface means including test output means for providing the results of said test vectors to said test system.

5,193,093
DATA TRANSFER PROCESS WITH LOOP CHECKING

Katsuyoshi Okazaki, Ebina, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 26, 1990, Ser. No. 470,793
Claims priority, application Japan, Jan. 27, 1989, 1-018422
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—34 15 Claims

1. A data transfer process for transferring data from a first system to a second system and carryout out loop checking, said process comprising the steps of:

(a) sending a part of the data from the first system to the second system;

(b) sending first information, from the first system to the second system, in response to said sending of the part of the data from the first system in step (a);

(c) reading the part of the data received in the second system when the first information is sent to the second system;

(d) sending the part of the data read in step (c) from the second system to the first system in response to said reading in step (c) to the first system;

(e) sending second information, from the second system to the first system, in response to said sending of the part of the data from the second system in step (d);

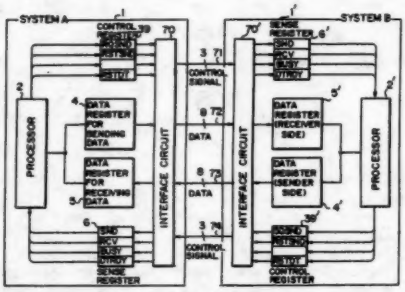
(f) reading the part of the data sent from the second system and received in the first system when the second information is sent to the first system in step (e);

(g) determining whether the part of the data sent from the first system in step (a) and the part of the data read in the second system in step (f) are equal;

(h) resending the part of the data sent from the first system in step (a) to the second system when it is determined, in step (g), that the part of the data sent from the first system in step (a) and the part of the data read in the first system in step (f) are not equal, said resending comprising the substeps of:

(h1) transforming the part of the data sent out in a preceding sending operation from the first system to the second system in a predetermined manner to produce a transformed part of the data;

(h2) sending gout the transformed part of the data from the first system to the second system;



(h3) sending third information, from the first system to the second system, that the transformed part of the data has been sent out in step (h2);

(h4) receiving the transformed part of the data sent in step (h2) in the second system;

(h5) sending out the transformed part of the data received in step (h4) from the second system to the first system;

(h6) sending fourth information, from the second system to the first system, that the transformed part of the data has been sent out from the second system to the first system in step (h5);

(h7) receiving the transformed part of the data sent from the second system in step (h5l);

(h8) determining whether the transformed data sent out from the first system in step (h2) and the transformed data received in the first system in step (h7) are equal;

(h9) returning to step (h1) when the transformed data sent out from the first system in step (h2) and the transformed data received in the first system in step (h7) are not equal; and

(h10) continuing with step (i) when the transformed data sent out from the first system in step (h2) and the transformed data received in the first system in step (h7) are equal; and

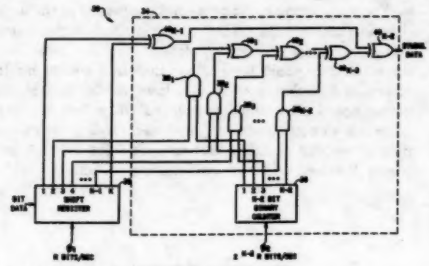
(i) repeating steps (a)–(h) for another part of the data until all of the data has been transferred to the second system.

5,193,094

METHOD AND APPARATUS FOR GENERATING SUPER-ORTHOGONAL CONVOLUTIONAL CODES AND THE DECODING THEREOF

Andrew J. Viterbi, La Jolla, Calif., assignor to Qualcomm Incorporated, San Diego, Calif.

Filed Mar. 7, 1990, Ser. No. 489,677
Int. Cl.[5] G06F *11/08*
U.S. Cl. 371—43 20 Claims



7. A data encoder comprising:

a register having an input for receiving an input sequence of data bits, and having a first through a K output at which is provided a respective one of the last K received bits of said input sequence of data bits;

an input EXCLUSIVE OR gate having a pair of inputs respectively coupled to said first and K outputs of said register, and an output;

an orthogonal function sequence generator having K−2 inputs each coupled to a respective one of a second through a K−1 output of said register, and having an output; and

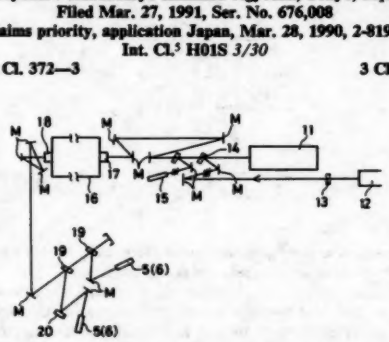
an output EXCLUSIVE OR gate having a pair of inputs respectively coupled to said first EXCLUSIVE OR gate output and said generator output, and an output.

5,193,095

MULTIMODE RAMAN LASER SYSTEM

Hideo Tashiro; Katsumi Midorikawa, both of Saitama, and Mitsutoshi Suzaki, Ibaraki, all of Japan, assignors to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, Japan

Filed Mar. 27, 1991, Ser. No. 676,008
Claims priority, application Japan, Mar. 28, 1990, 2-81906
Int. Cl.[5] H01S *3/30*
U.S. Cl. 372—3 3 Claims



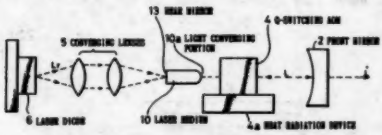
1. A multimode Raman laser system for performing Raman conversion, comprising a transversely excited atmospheric pressure CO_2 laser means for injecting a laser beam for excitation into Raman cell, wherein said transversely excited atmospheric pressure CO_2 laser means is an unstable resonator type oscillator, and wherein said Raman cell is a multimode Raman cell.

5,193,096

ACOUSTO-OPTIC Q-SWITCHED SOLID STATE LASER

Sho Amano, Hachiouji, Japan, assignor to Hoya Corporation, Tokyo, Japan

Filed Dec. 2, 1991, Ser. No. 801,520
Claims priority, application Japan, Nov. 30, 1990, 2-339160
Int. Cl.[5] H01S *3/117*
U.S. Cl. 372—13 20 Claims



1. A Q-switched solid state laser comprising:

a laser medium;

a pump source for generating pumping light used to pump the laser medium;

a pair of laser resonance mirrors respectively placed at both sides of the laser medium; and

a Q-switching acousto-optical element intervening between the pair of laser resonance mirrors for controlling Q-switching oscillation by abruptly changing a loss of resonant laser light passing therethrough, the Q-switching acousto-optical element satisfying a condition given by

$$|Ms| \geq 1 \times 10^{-12} s^3/g \cdot °C.$$

where Ms denotes a parameter defined as

$$Ms = M/(ds/dT)$$

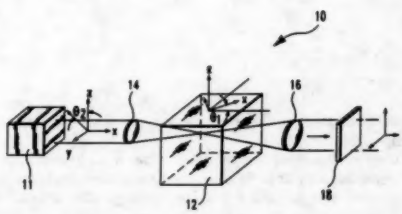
by letting (ds/dT) designate a thermal change in optical path of the Q-switching acousto-optical element and letting M represent a performance index of an acousto-optical material of the acousto-optical element.

5,193,097

OPTICAL DEVICE USING A CERIUM-DOPED KTP CRYSTAL

Peter F. Bordui, Menlo Park; Richard G. Norwood, San Jose, and Ronald Bischman, Sunnyvale, all of Calif., assignors to Crystal Technology, Inc., Palo Alto, Calif.

Filed Feb. 19, 1992, Ser. No. 838,627
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—21 26 Claims



1. An optical element, comprising a single crystal of potassium titanyl phosphate, which is represented by the formula $KTiOPO_4$ and doped with cerium.

5,193,098

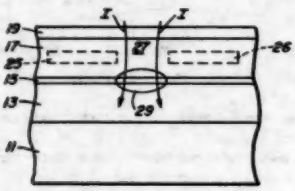
METHOD OF FORMING CURRENT BARRIERS IN SEMICONDUCTOR LASERS

David F. Welch; Donald R. Scifres, both of San Jose, and William Streifer, Palo Alto, all of Calif., assignors to Spectra Diode Laboratories, Inc., San Jose, Calif.

Continuation of Ser. No. 770,594, Oct. 3, 1991, abandoned, which is a division of Ser. No. 557,901, Jul. 25, 1990, which is a continuation-in-part of Ser. No. 303,754, Jan. 27, 1989, abandoned. This application Aug. 24, 1992, Ser. No. 935,475

Int. Cl.[5] H01S 3/19

U.S. Cl. 372—46 22 Claims



1. A semiconductor laser comprising:

a first plurality of adjacent semiconductor material layers of a first conductivity type,

an active lasing region defined by at least one semiconductor material layer disposed on said first plurality of layers,

a second plurality of adjacent semiconductor material layers disposed on said active region, said second plurality of layers including a plurality of semiconductor layers of a second conductivity type between side regions of said first conductivity type, said side regions of said first conductivity type having buried implant regions therein, said buried implants being characterized by a concentration distribution profile of a second conducting type impurity with a peak concentration greater than a concentration of first conductivity type impurities in said side regions, whereby said buried implant regions are of second conductivity type blocking current through said side regions, and

resonant cavity means disposed relative to opposed ends of said active region for providing feedback of light generated in said active lasing region.

5,193,099

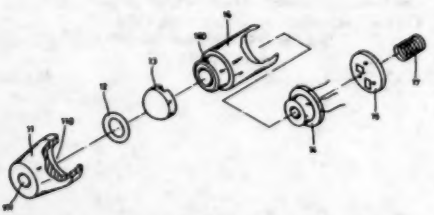
DIODE LASER COLLIMATTING DEVICE

Chia-Li Chou, Taipei, Taiwan, assignor to Quarton, Inc., Taiwan

Filed Nov. 21, 1991, Ser. No. 795,792

Int. Cl.[5] G02B 6/00; H01S 3/08, 3/11

U.S. Cl. 372—107 3 Claims



1. A diode laser collimatting device, the improvement comprising:

a laser collimatting socket made from a hollow, truncated cone defining therein a receiving chamber and having a center hole on the front end through the central axis thereof;

a socket holder made from a hollow metal tube having a tubular projection at the front tightly inserted into said receiving chamber in said laser collimatting socket, said socket holder being connected to a power supply at the positive terminal thereof;

a plastic lens mounted on said tubular projection at the front and received inside said receiving chamber;

a rubber ring to seal the gap between the inner wall surface of said laser collimatting socket and the outer wall surface of said tubular projection;

an exciter circuit board inserted in said socket holder;

a laser diode inserted in said socket holder in front of said exciter circuit board, said laser diode having connecting pins respectively connected to said exciter circuit;

a contact spring connected to said exciter circuit at the back, said contact spring having one end connected to the negative terminal of said exciter circuit and an opposite end connected to said power supply; and

wherein inserting said laser diode into said socket holder causes said socket holder, said laser diode, said exciter circuit board, said contact spring and said power supply to form into a circuit permitting said laser diode to be excited by said exciter circuit board to emit light through said plastic lens and said laser collimatting socket.

5,193,100

APPARATUS FOR DETECTING GASEOUS DISCHARGE IN VACUUM FURNACES

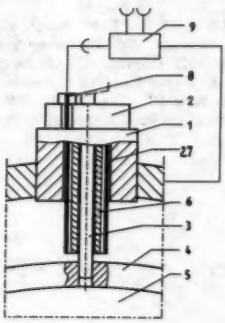
Robert Hack, Lahnau, and Wilhelm Polhede, Bruchköbel, both of Fed. Rep. of Germany, assignors to Arthur Pfeiffer Vakuumtechnik Wetzlar GmbH, Asslar, Fed. Rep. of Germany

Filed Jun. 21, 1991, Ser. No. 718,808

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1990, 4020818

Int. Cl.[5] F27D 7/06

U.S. Cl. 373—112 9 Claims



1. An apparatus for protection of electrically heated vacuum furnaces from gaseous leakage comprising:

heating elements in a vacuum chamber which are provided with a lead-through device that serves for transmitting electrical current to said heating elements wherein said lead-through device is surrounded by a lead-through device insulation;

an auxiliary electrode surrounds said lead-through device insulation; and

means for detecting a signal indicative of a gaseous discharge inside a vacuum chamber which is connected to said auxiliary electrode.

5,193,101

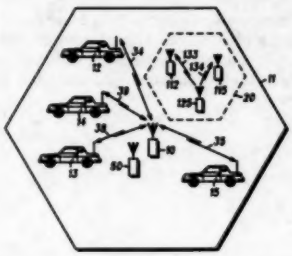
ON-SITE SYSTEM FREQUENCY SHARING WITH TRUNKING SYSTEMS USING SPREAD SPECTRUM

James A. McDonald, Buffalo Grove; Richard A. Comroe, Dundee; Arun Sobti, Wheaton; Paul M. Bocci, Roselle; Robert W. Furtaw, Arlington Heights, and Bradley M. Hiben, Glen Ellyn, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 4, 1991, Ser. No. 650,125

Int. Cl.[5] H04K *1/00*

U.S. Cl. 375—1 14 Claims



1. A communication system located within a service coverage area of trunked communication system, wherein the trunked communication system comprises:

A) a plurality of communication resources, each resource having a frequency pair;

B) means for measuring a signal quality factor of at least one transmitting communication unit; and,

C) means for transferring the signal quality factor to at least one small-cell receiving means;

said communication system comprising at least one small-cell communication system having:

A) a plurality of small-cell communication units each with means for communicating in a time division duplex format on an indexed communication resource from an indexing table of communication resources for an index interval;

B) at least one small-cell base site having at least one transceiver and a resource controller with means for communicating in a time division duplex format on an indexed control resource from an indexing table of communication resources for an index interval;

C) means for receiving the signal quality factor from the trunked communication system;

D) means for comparing the signal quality factor with a threshold to produce a result; and ,

E) means allocating an initial indexed communication resource from the indexing table of communication resources based at least in part upon the result to an at least one requesting small-cell communication unit of the plurality of communication units.

5,193,102

METHOD AND APPARATUS FOR IMPROVING DETECTION OF DATA BITS IN A SLOW FREQUENCY HOPPING COMMUNICATION SYSTEM

Reuven Meidan, Ramat Hasharon; Noam Livneh, D.N. Misgav; Glora Silbershatz, Haifa, and Mordechai Ritz, Givat-Elah, all of Israel, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 18, 1991, Ser. No. 794,104

Claims priority, application Israel, Nov. 10, 1991, 100029

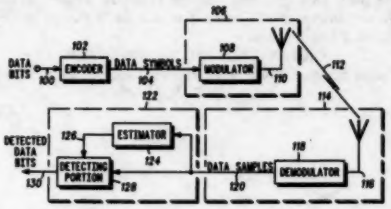
Int. Cl.[5] H04K *1/00*

U.S. Cl. 375—1 20 Claims

1. An apparatus comprising a detector for detecting data bits in input data samples of a hop of a slow frequency hopping spread spectrum signal, the detector comprising:

(a) estimator means for estimating the carrier to interference power ratio of the hop of the slow frequency hopping signal by using the input data samples of the hop; and

(b) detecting means, operatively coupled to the estimator means, for detecting data bits in the input data samples of



the hop of the slow frequency hopping signal by using the estimated carrier to interference power ratio.

5,193,103

DIGITAL PHASE LOCKED LOOP CIRCUIT

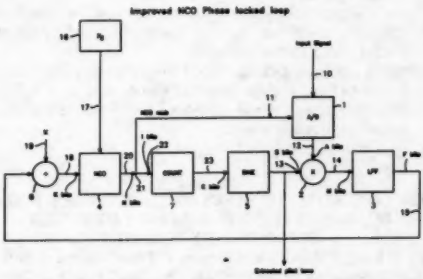
Bhajan Singh, Birmingham, and Vincent Considine, Longbuckby, both of England, assignors to GEC - Marconi Limited, Stanmore-Middlesex, England

Continuation-in-part of Ser. No. 317,496, Mar. 1, 1989, abandoned. This application Jul. 15, 1991, Ser. No. 729,315

Claims priority, application United Kingdom, Mar. 2, 1988, 8804974

Int. Cl.[5] H04I *27/12*

U.S. Cl. 375—120 6 Claims



1. An all-digital phase locked loop circuit for providing from a noisy analog input containing a desired signal, a digital output signal matching in frequency and phase the desired signal, the circuit comprising:

an analog to digital converter whereto the noisy analog input is fed;

clocking means for clocking said converter to provide digital samples of the noisy analog input;

a numerically controlled oscillator, said oscillator having an output of frequency a predetermined multiple of a frequency of the desired signal;

a counter, said counter receiving, as an input thereto, the output of said oscillator, said counter serving to divide the output of said oscillator by the predetermined multiple, to provide a counter output;

a sinewave generator, said generator receiving as an input thereto, the counter output and providing, as an output of the generator, sinusoidally varying digital values representing the desired signal;

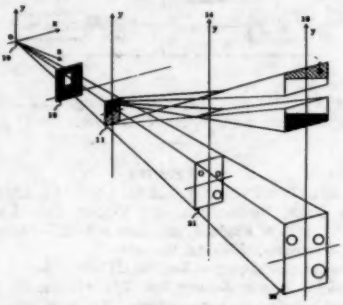
a mixer, said mixer receiving, as inputs, the digital samples and the generator output, said mixer having an output including a difference value between the inputs, the difference value being fed to said oscillator to control the frequency of the output thereof.

5,193,104

METHOD FOR ANALYZING MONOCRYSTALLINE PARTS BY X-RAYS

Pierre Bastie, Corenc, and Bernard Hamelin, Seyssinet, both of France, assignors to Centre National de la Recherche Scientifique, Paris, France

Filed Oct. 22, 1991, Ser. No. 779,191
Claims priority, application France, Oct. 23, 1990, 90 13330
Int. Cl.[5] G01N *23/207*
U.S. Cl. 378—73 17 Claims



12. An apparatus for detecting crystalline defects of a specimen, comprising:

a source of a beam of X-rays having a bandwidth $\Delta\lambda$ and a predetermined angular divergence defined by $\Delta\theta \leq \Delta\lambda/2d\cdot\cos\theta$, d being an interreticular distance for predetermined reticular planes;

means for positioning the specimen in a plane situated substantially equidistant from the focus of the polychromatic source and a focusing plane;

means for orienting the specimen to obtain the diffraction on a chosen family of the reticular planes; and

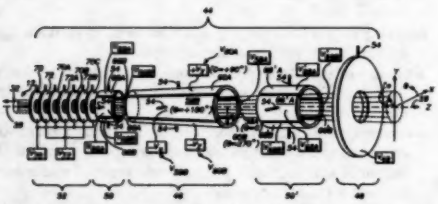
means for collecting and analyzing the X-ray beam proximate the focusing plane.

5,193,105

ION CONTROLLING ELECTRODE ASSEMBLY FOR A SCANNING ELECTRON BEAM COMPUTED TOMOGRAPHY SCANNER

Roy E. Rand, Palo Alto, and Eugene Y. Tsiang, Belmont, both of Calif., assignors to Imatron, Inc., So. San Francisco, Calif.

Filed Dec. 18, 1991, Ser. No. 809,924
Int. Cl.[5] H01J *35/06*
U.S. Cl. 378—137 21 Claims



1. An electrode assembly for correcting space-charge density non-uniformity in an electron beam generated in a vacuum housing chamber containing a low pressure gas from which positive ions may be created, the electron beam traveling in a downstream direction defining a Z-axis, the assembly being disposed substantially coaxially with the electron beam along the Z-axis and comprising:

first and second members, spaced-apart diametrically relative to the Z-axis, defining a first electrode pair;

third and fourth members, spaced-apart diametrically relative to the Z-axis, defining a second electrode pair;

means for coupling said first, second, third and fourth members respectively to first, second, third and fourth potential sources;

said potential sources creating a potential difference between said members comprising each said electrode pair causing each said electrode pair to create an electric field;

the assembly producing a resultant electric field equal to the vector sum of each said electric field created by each said electrode pair;

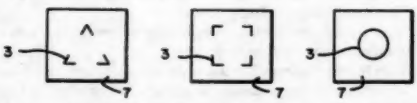
wherein said resultant electric field is controllably rotated, by varying chosen ones of said potential sources, to an orientation controllably removing sufficient positive ions to compensate for space-charge density non-uniformity in said beam.

5,193,106

X-RAY IDENTIFICATION MARKER

Danforth DeSena, 4 Ivie Rd., Cape Elizabeth, Me. 04107

Filed Aug. 28, 1990, Ser. No. 573,897
Int. Cl.[5] H05G *1/28*
U.S. Cl. 378—163 10 Claims



1. A marker device to be used in the x-ray examination of problematic deep structures of the foot, wherein said problematic deep structures of the foot are denoted by cutaneous landmarks, said marker device comprising:

a. a tape with pressure-sensitive adhesive on one surface thereof and a non-adhering surface on a side opposite, wherein said tape is suitable for attachment to the surface of the skin of the foot, and

b. a radiopaque material affixed to said non-adhering surface of said tape, wherein said radiopaque material is formed into a shape such that it completely surrounds a cutaneous landmark in a surrounding shape of an internal size comparable to that of cutaneous landmarks of podiatric pathologies.

5,193,107

SPEAKERPHONE TEST SET

Geoffrey H. Parker, Ventura, and Andrew J. Hefley, Channel Islands Beach, both of Calif., assignors to Harris Corporation, Melbourne, Fla.

Filed Sep. 20, 1991, Ser. No. 763,274
Int. Cl.[5] H04M *9/08*
U.S. Cl. 379—21 27 Claims

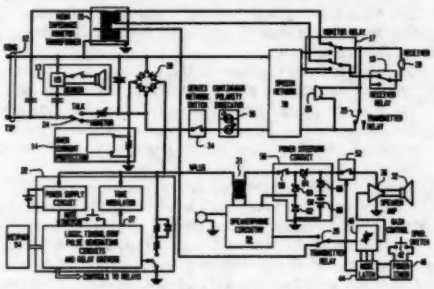
1. A telephone test set circuit comprising:

means for performing dry loop testing of telephone lines;

a passive speech network coupled to the means for performing dry loop testing;

a speakerphone circuit;

an amplifier and speaker coupled to the speakerphone circuit; and



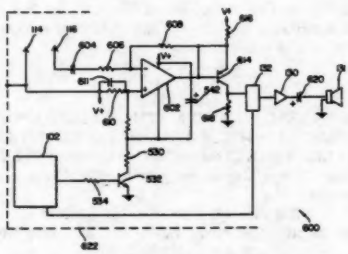
means for isolating the passive speech network and the speakerphone circuit.

5,193,108

PORTABLE TELECOMMUNICATIONS TEST INSTRUMENT WITH INDUCTIVE PROBE CIRCUIT

Clay A. Stocklin, Redmond, Wash., assignor to Leviton Manufacturing Co., Inc., Little Neck, N.Y.

Filed Oct. 4, 1991, Ser. No. 771,457
Int. Cl.[5] H04M *3/26*
U.S. Cl. 379—21 4 Claims



1. A portable, self-powered telecommunications test instrument for sensing a tone signal, the instrument comprising:

a case that is sized to be held in one hand and containing therein the circuitry of the instrument;

a battery to provide power to the instrument;

an inductive input means for inductively coupling an input signal to the instrument;

a differential amplifier circuit with first and second inputs, said first input being coupled to said inductive input means, said second input being a first reference input to said amplifier, said amplifier providing amplification of said input signal;

a reference means for permitting conversion of said amplified input signal which is referenced to said first reference to a converted signal which is referenced to a second reference;

an audio amplifier, referenced to said second reference, for further amplifying said converted signal;

means for generating an audio output responsive to said converted signal;

a second circuit within the instrument also being coupled to said first input of said differential amplifier, said second circuit being active and having high impedance input means for eliminating the flow of current from said first input of said differential amplifier into said second circuit; and

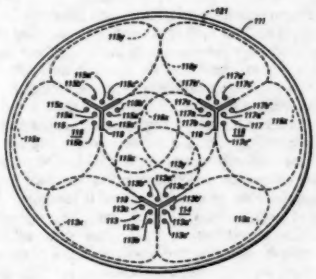
a third circuit within the instrument also coupled to said first input of said differential amplifier, said third circuit being inactive but having a leakage current flowing from said first input of said differential amplifier to said second reference through a high impedance pathway of said third circuit, said third circuit having shunting means for providing a low impedance pathway to couple said leakage current to said second input of said differential amplifier to convert said current leakage from a differential signal to a common mode signal which is not amplified by said differential amplifier.

5,193,109

ZONED MICROCELL WITH SECTOR SCANNING FOR CELLULAR TELEPHONE SYSTEM

William Chien-Yeh Lee, Corona Del Mar, Calif., assignor to PacTel Corporation, Walnut Creek, Calif.

Filed Oct. 25, 1991, Ser. No. 784,667
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—60 13 Claims



1. In a cellular telephone system wherein a plurality of contiguous cells, each having an assigned set of communication channels, are arranged with handoff means for maintaining continuous communication with mobile telephones moving from cell to cell,

a cell having a plurality of antenna sets, each set being positioned and having transmitting and receiving means directionally configured to limit propagation and reception of signals substantially to a zone within the boundaries of said cell,

each of said plurality of antenna sets being divided into a plurality of sub-sets, each sub-set being positioned and having transmitting and receiving means directionally configured to limit propagation and reception of signals substantially to a sector within the boundaries of the zone served by the associated antenna set,

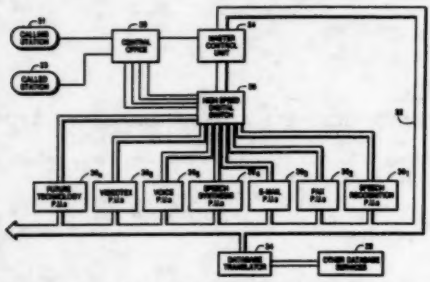
control means including means for monitoring the strength of the signal associated with each one of the communication channels assigned to said cell and received by each of said sub-sets of each of said antenna sets,

and means for switching to a selected antenna sub-set in said cell having the strongest received signal associated with a selected one of the communication channels such that communication using said selected communication channel is maintained and is limited to the sector associated with the selected antenna sub-set.

5,193,110
INTEGRATED SERVICES PLATFORM FOR TELEPHONE COMMUNICATION SYSTEM

Scott A. Jones, Prides Crossing; Allen T. Arumainayagam, Malden; Amitava Mukherjee, Boston; Donald F. Picard, Medford, and Richard E. Cohen, Somerville, all of Mass., assignors to Boston Technology, Incorporated, Wakefield, Mass.

Filed Oct. 9, 1990, Ser. No. 594,648
Int. Cl.[5] H04M *11/00, 1/64, 3/42, 7/00;* **H04T** *3/12*
U.S. Cl. 379—94 **19 Claims**



1. An information communication system for providing a requested information service, comprising:

processing means for providing a first information service to a user via at least two first service processing ports and a second information service to a user via at least two second service processing ports, the first and second information services being different types of services;

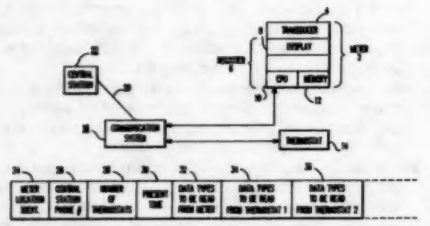
digital switching means for connecting the user to a selected one of said at least two first service processing ports and said at least two second service processing ports; and

control means for selecting an available one of said at least two first service processing ports and said at least two second service processing ports in response to the requested information service, and causing said digital switching means to connect the user to the selected one of said at least two first service processing ports and said at least two second service processing ports to provide the requested information service.

5,193,111
AUTOMATED DATA TRANSMISSION SYSTEM

Thomas C. Matty, N. Huntingdon, Pa.; Robert G. Colclaser, III, Grafton, Mass., and Gary O. Hitchins, Sewickley Township, Westmoreland County, Pa., assignors to ABB Power T&D Company, Blue Bell, Pa.

Continuation of Ser. No. 445,295, Dec. 4, 1989, abandoned. This application Jan. 6, 1992, Ser. No. 815,886
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—106 **17 Claims**



1. A method for controlling the transmission of data, via a telephone line, from a plurality of data reading and storage devices at a first location where data is collected to a central station, the plurality of data reading and storage devices including a first data reading and storage device having means for reading and storing data of at least one data type and a second data reading and storage device having means for reading and storing data of a plurality of different data types, the method comprising:

collecting and storing data of the at least one type in the reading and storing means of the first device and data of each of the plurality of different types in the reading and storing means of the second device at the first location;

providing an indication of the present time at the first location;

storing, in a first storing step at the first location an indication of a selected time which is later than the present time;

storing, in a second storing step at the first location, an indication of the at least one data type for which data is stored in the first device and an indication of at least a selected one of the plurality of data types for which data is stored in the second device;

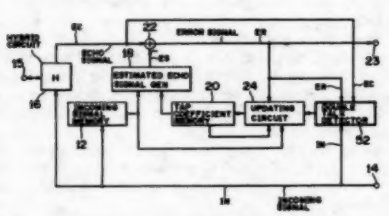
comparing the indication of the present and selected times and establishing a connection, via the telephone line, from the first location to the central station when the present time becomes later than the selected time; and

effecting a communication, via the connection, which includes a first transmission of data of the selected ones of the stored data types from the first location to the central station and a second transmission, from the central station to the first location, of an indication of a new selected time and an indication of the data types for which data is to be transmitted during the next communication, which data types include the at least one data type for which data is stored in the first device and at least one, but less than all, of the plurality of different data types for which data is stored in the second device.

5,193,112
ARRANGEMENT AND METHOD FOR RAPIDLY DETECTING DOUBLE TALK IN LONG DISTANCE TELEPHONE COMMUNICATIONS SYSTEM

Hideo Sano, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 24, 1991, Ser. No. 645,905
Claims priority, application Japan, Jan. 24, 1990, 2-14250
Int. Cl.[5] H04B *3/20*
U.S. Cl. 379—410 **11 Claims**



1. An echo canceller for cancelling an echo signal in a telephone communications system, comprising:

an echo estimator including a transversal filter, said echo estimator receiving an incoming signal and adaptively producing an estimate echo signal;

a subtractor coupled to said echo estimator, said subtractor subtracting said estimated echo signal from the echo signal applied thereto, said subtractor outputting an error signal indicating residual echo;

a tap coefficient memory for storing tap coefficients and applying said tap coefficients to said echo estimator;

a tap coefficient updating circuit coupled to receive said error signal and said incoming signal and said tap coefficients, said tap coefficient updating circuit applying renewed tap coefficients to said tap coefficient memory;

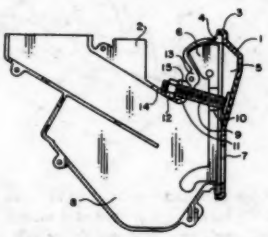
a double talk detector coupled to receive said error signal and said incoming signal and said echo signal, said double talk detector producing a double talk detection signal in the event that a cross-correlation value between said incoming and echo signals is less than a first predetermined level while an estimated echo cancellation is larger than a second predetermined level.

5,193,113

PROTECTIVE PLATE FOR PAYSTATION ANTI-STUFFING DEVICE

Gerald B. McGough, Huntsville, Ala., assignor to Quadrum Telecommunications, Inc., Arab, Ala.

Filed Jul. 29, 1991, Ser. No. 737,355
Int. Cl.[5] H04M *17/00*; B65G *11/04*
U.S. Cl. 379—437 **8 Claims**



1. An anti-stuffing device protector for use with a coin chute of a telephone paystation including an anti-stuffing device including a tiltable door operable to make coins returned via said coin chute accessible by the user of said telephone paystation, said protector for said anti-stuffing device comprising:

a cover portion fitted securely over said door of said anti-stuffing device;

said cover portion including a raised portion adapted to facilitate movement of a portion of said door within said raised portion in response to manual movement of said door by said user of said paystation telephone;

fastening means for securing said cover to said anti-stuffing device.

5,193,114

CONSUMER ORIENTED SMART CARD SYSTEM AND AUTHENTICATION TECHNIQUES

Donald R. Moseley, 197 Johnson Ave., Meriden, Conn. 06450

Filed Aug. 8, 1991, Ser. No. 742,314
Int. Cl.[5] H04L *9/00*
U.S. Cl. 380—23 **8 Claims**

1. A method of authenticating a person's identity who claims authority to use a device as a part of a closed system comprising the steps of:

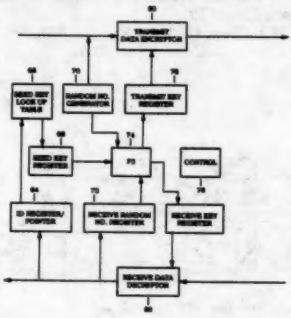
A. having said person enter an identification code on a plurality of electric switches and

B. measuring the amount of time each individual switch is activated and

C. measuring the amount of time between deactivation of each switch and activation of the following switch

D. measuring the cadence of code entry and,

E. comparing said measurements to counterpart measurements taken on previous code entries made by the known



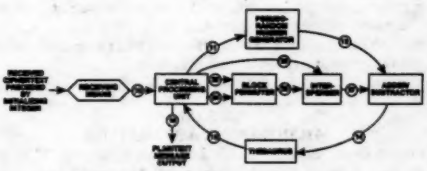
authorized person to determine if a predetermined positive correlation exists to authenticate the claiming person.

5,193,115

PSEUDO-RANDOM CHOICE CIPHER AND METHOD

Arnold R. Vobach, 11114 Ashcroft, Houston, Tex. 77096

Continuation-in-part of Ser. No. 577,936, Sep. 5, 1990, Pat. No. 5,113,444. This application Jan. 22, 1992, Ser. No. 824,025
Int. Cl.[5] H04L *9/02*
U.S. Cl. 380—46 **24 Claims**



1. A cipher system for use by a sender and a receiver to generate cryptograms, the system comprising:

(a) a plaintext alphabet, each character of which is coded by a collection of numerical synonyms comprising non-negative integers of a common fixed length such that:

(i) the fraction, of all the numerical synonyms, for all the plaintext alphabet characters, corresponding to a given plaintext alphabet character is substantially equal to the relative frequency of use of that plaintext alphabet character in constructing meaningful plaintext messages;

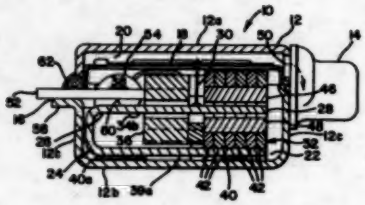
(ii) the numerical synonyms for each plaintext alphabet character are randomly distributed in the collection of all non-negative integers, in their natural ordering, which have the common fixed length of the numerical synonyms; and

(iii) the choice of a numerical synonym to represent a plaintext alphabet character is pseudo-randomly made from the collection of numerical synonyms corresponding to that plaintext alphabet character;

(b) a concatenation of the numerical synonyms comprising a plaintext message string integer corresponding to a plaintext message; and

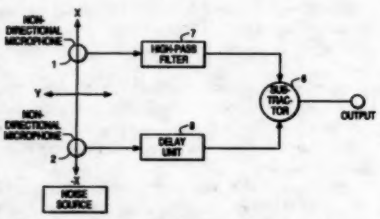
(c) a masking tape string comprising a pseudo-random sequence of digits, generated by an initializing seed, a new initializing seed for each cryptogram and the initializing seed concealed as a subset of the digits of an initializing integer, and added to the plaintext message string to form a ciphertext string.

5,193,116
HEARING AND OUTPUT TRANSDUCER WITH SELF CONTAINED AMPLIFIER
August F. Mostardo, Norridge, Ill., assignor to Knowles Electronics, Inc., Itasca, Ill.
Filed Sep. 13, 1991, Ser. No. 759,480
Int. Cl.[5] H04R 25/00
U.S. Cl. 381—69 17 Claims



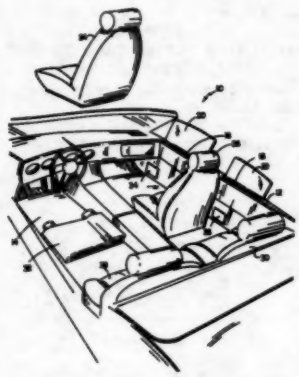
1. An integrated hearing aid receiver comprising:
a housing having a first outlet port;
a diaphragm disposed within said housing and defining a motor chamber and an output chamber, said output chamber communicating with said first outlet port;
an armature disposed within said motor chamber and having an operative element comprising a fixed end and a movable end;
coupling means for operably coupling said armature to said diaphragm;
a permanent magnet structure disposed about said armature movable end and providing a magnetic field at said armature movable end;
a drive coil disposed about said armature adjacent said permanent magnet structure; and
an amplifier coupled to said drive coil and disposed between said armature and said diaphragm.

5,193,117
MICROPHONE APPARATUS
Kiminori Ono, Katano; Michio Matsumoto, Sennan; Hiroyuki Naono, Yawata; Hiroshi Kobayashi, Moriguchi, and Yuuji Yamashina, Takatsuki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Nov. 13, 1990, Ser. No. 612,145
Claims priority, application Japan, Nov. 27, 1989, 1-307036
Int. Cl.[5] H03B 29/00
U.S. Cl. 381—71 1 Claim



1. A microphone apparatus comprising:
a first non-directional microphone;
a second non-directional microphone disposed at a distance to the first non-directional microphone so that main axes of the first and second non-directional microphones are aligned on a straight line;
a delay unit for delaying an output signal of the second non-directional microphone;
a high-pass filter for removing low frequency components of an output signal of the first non-directional microphone; and
a subtracter for subtracting an output signal of the delay unit from an output signal of the high-pass filter.

5,193,118
VEHICULAR SOUND REPRODUCING
Ernest Latham-Brown, Framingham; Brian J. Gawronski, Northboro, and Peter W. Hubbe, Marlboro, all of Mass., assignors to Bose Corporation, Framingham, Mass.
Continuation of Ser. No. 380,924, Jul. 17, 1989, abandoned. This application Feb. 27, 1992, Ser. No. 842,743
Int. Cl.[5] H04B 1/00
U.S. Cl. 381—86 11 Claims



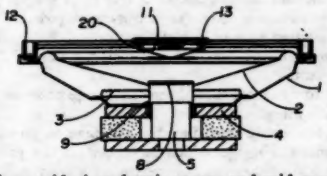
1. A vehicle with sound reproducing apparatus comprising
a vehicle body including a floor and front and rear, left and right side panels and windows above said side panels to partially define a passenger enclosure,
front seats and rear seats having seating surfaces in said passenger enclosure,
four upper frequency driver units that radiate in at least the upper frequency range and are located in lower portions of respective said front and rear, left and right side panels
wherein said front upper frequency driver units are located forward of and below the front passenger seats seating surfaces, and said rear upper frequency driver units are located forward of and below the rear passenger seats seating surfaces, and
a nonlocalizable woofer module acoustically coupled to said passenger enclosure that provides to said passenger enclosure low frequency spectral components of frequencies lower than those provided by the upper frequency driver units.

5,193,119
MULTIPLE LOUDSPEAKER
Franco Tontini, Via G. Matteotti, 41/A, Falconara Marittima (AN), and Carlo Sancisi, Via Milite Ignoto, 71, Pesaro, both of Italy
Continuation of Ser. No. 240,382, Aug. 30, 1988, abandoned, which is a continuation of Ser. No. 884,646, Jul. 11, 1986, abandoned. This application Apr. 27, 1990, Ser. No. 517,415
Claims priority, application Italy, Sep. 2, 1985, 625 A/85
Int. Cl.[5] H04R 25/00
U.S. Cl. 381—182 9 Claims

1. A multiple loudspeaker, comprising:
housing means having a top and a bottom,
first speaker means supported by said housing means, said first speaker means including first diaphragm means having an inner surface and first acoustic transducer means,
second speaker support means supported by the top of said

housing means, a portion of said second speaker support means spaced from said first speaker means,

second speaker means including second diaphragm means attached to said spaced portion of said second speaker support means, and piezoelectric means attached to said second diaphragm means between said second diaphragm means and said first speaker means, said piezoelectric means and second diaphragm means being spaced from said first speaker means and in unobstructed acoustic communication therewith so that acoustic waves emanating from said piezoelectric means and said second diaphragm means radiate unobstructed to the inner surface of said first diaphragm means of said first speaker means and are reflected forward from said first speaker and outside the multiple loudspeaker, and



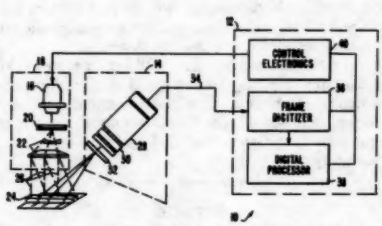
attaching means for attaching only the top of said second diaphragm means to said spaced portion of said second speaker support means, said attaching means including a central annular flange supporting said second diaphragm means, whereby said second speaker means is spaced from said first speaker means.

5,193,120

MACHINE VISION THREE DIMENSIONAL PROFILING SYSTEM

Ronald W. Gamache, East Greenbush, and John A. Tourtellott, Latham, both of N.Y., assignors to Mechanical Technology Incorporated, Latham, N.Y.

Filed Feb. 27, 1991, Ser. No. 661,679
Int. Cl.[5] G06K 9/00
U.S. Cl. 382—1 **5 Claims**



1. A system for generating a three dimensional image of an object comprising

light projector means for generating lines of light onto an object;

imaging means, including an imaging lens, for viewing the lines of light at points along said lines at an angle to provide a profile of the object and providing an output corresponding to an image of the lines of light reflected from the object;

processing means for processing the output from the imaging means at points along the lines of light, said processing includes determining centroids for said points generating a two dimensional image point defined by the ordered pair (x, y) and transforming said image point to a three dimensional point; and

wherein said processing means utilizes optical magnification of said imaging lens and the geometry of the lines of light to process the image points in the following manner:

$$X=m*x+m*e*x^3+(dm/dz)*Z$$

$$Y=m*y+m*e*y^3+(dm/dz)*Z$$

where m is the optical magnification and e is the optical distortion and the equation for the geometry of lines in a geometric plane is

$$a*X+b*Y+c*Z=1$$

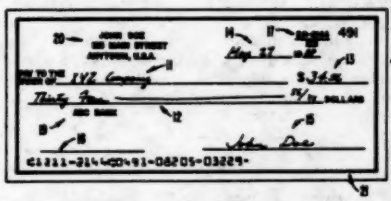
where a, b, and c are calibration parameters; and wherein by solving these equations simultaneously image coordinates X, Y, Z are determined; and means for generating said three dimensional image based on the coordinates determined by said processing means.

5,193,121

COURTESY AMOUNT READ AND TRANSACTION BALANCING SYSTEM

Victor P. Elischer, Richmond; Ilan Keret, Albany; Milton Johnson, Oakland; Ihsan Tumenbatur, Milpitas, and David B. Aragon, Berkeley, all of Calif., assignors to TRW Financial Systems, Inc., Berkeley, Calif.

Continuation of Ser. No. 200,143, May 31, 1988, Pat. No. 5,040,226. This application Aug. 15, 1991, Ser. No. 740,165
The portion of the term of this patent subsequent to Aug. 13, 2008, has been disclaimed.
Int. Cl.[5] G06K 9/00
U.S. Cl. 382—7 **6 Claims**



1. A method of processing documents to record handwritten numerical entries, a document to be processed including a plurality of first predetermined fields containing handwritten numerical entries and a second predetermined field containing a numerical entry representing the combined value of the numerical entries of said first predetermined fields, said method comprising the steps of:

locating said predetermined fields;

segmenting said predetermined fields into segments, each containing an individual character of the numerical entry of the associated predetermined field;

subjecting each said character segment to character recognition analysis so as to associate a character therewith;

assigning a character confidence level to each said character representing the accuracy with which the associated character was recognized.

deriving an overall confidence level for each numerical field from the associated character confidence levels;

automatically computing the combined value of the recognized numerical entries for said first predetermined fields;

automatically recognizing the numerical entry value of said second predetermined field;

comparing said computed combined value with the recognized numerical value of said second predetermined field to verify whether said computed combined value and said recognized value match;

if said computed and recognized values fail to match, displaying the images of the numerical entries in the order of increasing overall confidence levels, whereby a key operator may enter numerical entries from the images;

repeating said comparing step after each numerical entry

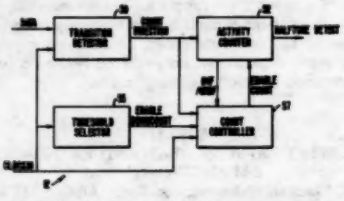
from the images; and terminating said displaying step when a match is found.

5,193,122

HIGH SPEED HALFTONE DETECTION TECHNIQUE

Robert P. Kowalski, Campbell, and Dan S. Bloomberg, Palo Alto, both of Calif., assignors to Xerox Corporation, Rochester, N.Y.

Filed Dec. 3, 1990, Ser. No. 621,478
Int. Cl.[5] G06K 9/34
U.S. Cl. 382—9 20 Claims



1. A method of processing a digital image presented as a serial bit stream representing lines of pixels in the image, comprising the steps of:

monitoring the bit stream;

maintaining a count within a predetermined range;

incrementing the count based on a condition relating to the occurrence of a transition;

decrementing the count based on a condition relating to the lack of transitions;

specifying which one of at least two numerical ranges the count falls; and

subjecting the bit stream to one set of a number of sets of operations, each set of which corresponds to a respective numerical range, wherein at least two sets are different from each other, the one set corresponding to the specified numerical range.

5,193,123

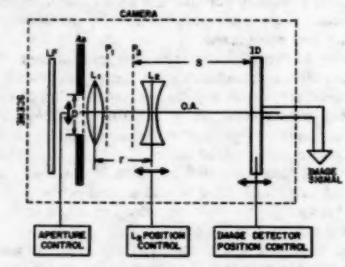
Patent Not Issued For This Number

5,193,124

COMPUTATIONAL METHODS AND ELECTRONIC CAMERA APPARATUS FOR DETERMINING DISTANCE OF OBJECTS, RAPID AUTOFOCUSING, AND OBTAINING IMPROVED FOCUS IMAGES

Muralidhara Subbarao, Setauket, N.Y., assignor to The Research Foundation of State University of New York, Albany, N.Y.

Filed Jun. 15, 1990, Ser. No. 537,117
Int. Cl.[5] G06K 9/36
U.S. Cl. 382—41 22 Claims



L_1, L_2: LENSES; Ao: APERTURE STOP; ID: IMAGE DETECTOR
LF: LIGHT FILTER; P_1, P_2: PRINCIPAL PLANES; O.A.: OPTICAL AXIS

1. A method of determining the distance of a surface patch of an object from a camera system having an aperture through which light enters, an image detector, an image forming optical system having first and second principal planes and a focal length, said second principal plane arranged closer to said image detector than said first principal plane, a light filter, a camera controller, and an image processor operatively connected to said image detector and to said camera controller, said method comprising:

a) setting said camera to a first set of camera parameters including at least one of (i) distance (s) between said second principal plane and said image detector, (ii) diameter (D) of said camera aperture, (iii) focal length (l) of said camera system, and (iv) spectral characteristic (λ) of light transmitted by said light filter;

b) forming a first image of said surface patch on said image detector;

c) recording said first image in said image processor as a first digital image;

d) preprocessing said first digital image to provide a first normalized image which is related to the point spread function of said camera system by a convolution operation;

e) calculating a first set of Fourier coefficients of said first normalized image at a set of discrete spatial frequencies;

f) changing at least one of said camera parameters;

g) forming a second image of said surface patch on said image detector;

h) recording said second image in said image processor as a second digital image;

i) preprocessing said second digital image to provide a second normalized image which is related to the point spread function of said camera by a convolution operation;

j) calculating a second set of Fourier coefficients of said second normalized image at said set of discrete spatial frequencies;

k) dividing said first set of Fourier coefficients by said second set of Fourier coefficients to provide a set of ratio values;

l) providing a signal mathematical relationship corresponding to each member of said set of ratios, said mathematical relationship provided without any intermediate parameter and representing the ratio of the optical transfer function of said first normalized image to the optical transfer function of said second normalized image, each said mathematical relationship dependent only on said camera parameters and having one unknown equal to said distance of said surface patch from said camera system;

m) substituting each ratio value resulting from step (k) in the signal corresponding mathematical relationship provided in step (l) to obtain a set of equations; and

n) solving said set of equations resulting from step (m) to determine said distance of said surface patch from said camera system.

5,193,125

LOCAL HIERARCHICAL PROCESSING FOCUS SHIFT WITHIN AN IMAGE

James V. Mahoney, Sunnyvale, Calif., assignor to Xerox Corporation, Stamford, Conn.

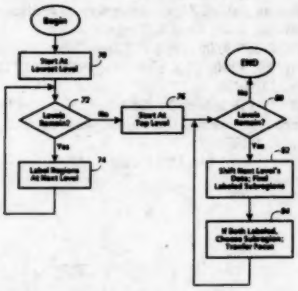
Filed Jun. 8, 1990, Ser. No. 537,468
Int. Cl.[5] G06K 9/00
U.S. Cl. 382—41 8 Claims

1. A method of operating a system that includes a memory array and a processor connected for accessing the memory array, the method comprising steps of:

storing in the memory array a body of data defining an image that includes a plurality of pixels, the body of data including a respective pixel data item for each of the pixels; each pixel's respective pixel data item including current focus data indicating whether the pixel is a current focus pixel; and

operating the processor to set the current focus data of a first one of the pixels to indicate that the first pixel is the cur-

rent focus pixel; the step of operating the processor comprising a substep of:



shifting the current focus data of all the pixels within the array so that the current focus data of a second pixel is shifted to the first pixel's respective pixel data item to set the first pixel's current focus data.

5,193,126

IMAGE DEFORMATION METHOD AND APPARATUS USING COORDINATE TRANSFORMATION

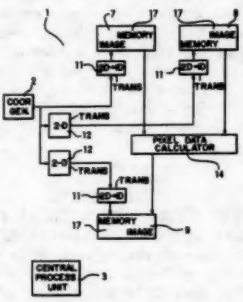
Hiroshi Matsuki, Moriguchi, Japan, assignor to Toyo Ink Mfg. Co., Ltd., Tokyo, Japan

Filed Jan. 18, 1991, Ser. No. 644,306

Claims priority, application Japan, Jan. 25, 1990, 2-15553; Jan. 25, 1990, 2-15554; Mar. 2, 1990, 2-51047; Mar. 2, 1990, 2-51048; Mar. 2, 1990, 2-51049

Int. Cl.[5] G06K *9/32*

U.S. Cl. 382—44 **14 Claims**



1. An image processing apparatus comprising:

a memory unit for storing pixels of an image by a two-dimensional array of pixel addresses;

an address supplier for generating two-dimensional addresses of pixels in the memory unit;

a two- to one-dimensional address coordinate transformation unit for transformation between a set of one-dimensional address coordinate values of an image and a set of two-dimensional address coordinate of the image values, said two- to one-dimensional address coordinate transformation unit comprising offset address reading means responsive to addresses of said address supplier for tabulating addresses as a sequence of addresses;

a two-dimensional coordinate transformation unit, operative with pixels of the image, for transforming coordinate values (x, y) of the image within a predetermined area on an x-y coordinate system into coordinate values (X, Y) within a predetermined area on an X-Y coordinate system;

an inter-pixel data calculation unit, operative with pixel data of the image and with pixel data of a further image, for calculating pixel data of a composite image from pixels of said first-mentioned image and said further image; and

wherein said memory unit stores each image.

5,193,127

METHOD AND DEVICE FOR DETECTING PATTERNS ADAPTED AUTOMATICALLY FOR THE LEVEL OF NOISE

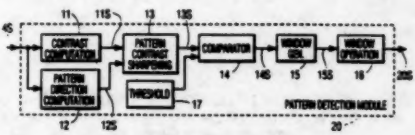
Johannes A. C. Bernsen, Eindhoven, Netherlands, and Seiji Kashioka, Tokyo, Japan, assignors to U.S. Phillips, New York, N.Y. and Hitachi, Ltd., Tokyo, Japan

Filed Mar. 29, 1991, Ser. No. 677,705

Claims priority, application Japan, Mar. 30, 1990, 2-80745

Int. Cl.[5] G06K *9/20*

U.S. Cl. 382—48 **14 Claims**



1. A method for distinguishing noise responses from true pattern responses comprising the steps of

a) receiving an input signal;

b) using a pattern detector to identify candidate locations where a pattern is detected in the input signal;

c) determining whether a count of candidate locations in a neighborhood of a particular candidate location exceeds a threshold;

d) distinguishing said particular candidate location as containing a true pattern response, when said count is below said threshold.

5,193,128

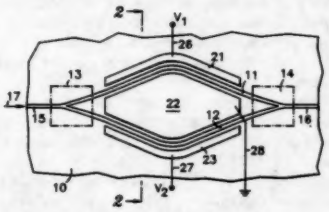
INTEGRATED OPTIC MODULATOR WITH SMOOTH ELECTRO-OPTIC BANDPASS CHARACTERISTICS

James D. Farina, Tolland, and Paul G. Suchoski, East Hartford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 26, 1991, Ser. No. 813,468

Int. Cl.[5] G02B *6/10*

U.S. Cl. 385—3 **7 Claims**



1. An optic intensity modulator comprising

a substrate of an optic material that is conductive to light and acoustic waves and has both electrooptic and piezoelectric properties;

a pair of associated elongated light waveguides formed in said substrate, extending substantially coextensively with one another, and separated from one another by a transverse distance that gradually varies along and over substantially the entire courses of said waveguides;

means for launching two portions of light of substantially identical properties each into one of said waveguides for propagation longitudinally thereof;

means for inducing different phase shifts in said light por-

tions as they propagate in said waveguides, including means for imposing different variable electric fields onto each of said waveguides; and

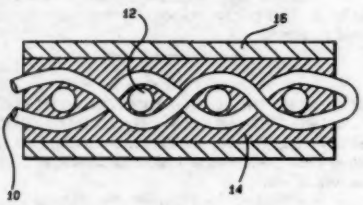
means for combining said light portions with one another after the emergence thereof from said waveguides with attendant amplitude modulation of the combined output light due to interference between such phase-shifted light portions.

5,193,129

PRESSURE SENSOR UTILIZING MICROBENDING OF A FIBER OPTIC CABLE WOVEN THROUGH A LADDER SHAPED STRUCTURE

Dennis A. Kramer, Troy, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Sep. 27, 1991, Ser. No. 766,878
Int. Cl.[5] G02B 6/00, 6/36
U.S. Cl. 385—13 9 Claims



1. A pressure sensor comprising:

a plurality of parallel axially spaced members having a first portion disposed above an axis defined therethrough and a second portion disposed below said axis;

means for retaining said members in parallel axially spaced relation;

a light conduit disposed in contact with said parallel axially spaced members so as to alternatively engage first and second portions of sequential parallel axially spaced members;

a light source connected to an end of said conduit for directing a known quantity of light into said conduit;

a light detector connected to an opposing end of said conduit for detecting the quantity of light transmitted therethrough;

said conduit defining an undeformed transmission property characterized by a first transmission loss providing a first magnitude light quantity incident upon said light detector and a deformed transmission property characterized by a second transmission loss providing a second magnitude light quantity;

means for comparing the quantity of light transmitted therethrough to a threshold value; and

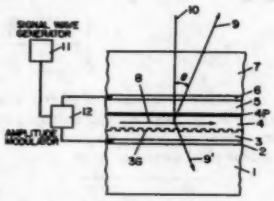
means for indication upon said second quantity becoming less than said threshold value.

5,193,130

LIGHT DEFLECTING DEVICE

Seiji Nishiwaki, Katano; Yoshinao Taketomi, Moriguchi; Shinji Uchida, Osaka; Takaaki Tomita, Moriguchi, and Junichi Asada, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

PCT No. PCT/JP89/00797, § 371 Date Mar. 20, 1990, § 102(e) Date Mar. 20, 1990, PCT Pub. No. WO90/01722, PCT Pub. Date Feb. 22, 1990
PCT Filed Aug. 2, 1989, Ser. No. 474,763
Claims priority, application Japan, Aug. 5, 1988, 63-196584; Apr. 28, 1989, 1-109347
Int. Cl.[5] G02B 6/12
U.S. Cl. 385—14 13 Claims



1/A light deflecting device comprising:

a substrate,

a conductive thin film formed on said substrate,

a waveguide layer for transmitting waveguide light therethrough, said waveguide layer being formed on said conductive thin film,

a transparent substrate,

a transparent conductive thin film formed on a surface of said transparent substrate,

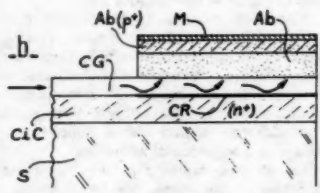
a liquid crystal layer interposed between said transparent conductive thin film and said waveguide layer, said waveguide layer having a cyclical structure formed on its surface along the direction of propagation of the waveguide light, said cyclical structure including means for cooperating with said waveguide layer and said liquid crystal layer to radiate the waveguide light as radiated light outside of said waveguide layer such that the direction of the radiated light is changed by applying a voltage signal between said conductive thin film and said transparent conductive thin film.

5,193,131

OPTOELECTRONIC DEVICE WITH AN INTEGRATED OPTICAL GUIDE AND PHOTODETECTOR

Adrien Bruno, Palaiseau, France, assignor to France Telecom Etablissement Autonome De Droit Public, Paris, France

Filed Apr. 28, 1992, Ser. No. 875,018
Claims priority, application France, Apr. 30, 1991, 91 05299
Int. Cl.[5] G02B 6/10
U.S. Cl. 385—14 12 Claims



1. Optoelectronic device having an integrated optical guide and photodetector successively comprising on the same semiconductor substrate (S), a first, lower confinement layer (CiC) made from a first material having a first index (n1), a second

guide layer (CG) made from a second material having a second index (n2) higher than the first (n1), optionally a third, upper confinement layer (CsG) made from a third material having a third index (n3) below the second (n2), a fourth absorption layer (Ab) made from a fourth material having a fourth index (n4) and able to absorb the radiation from the guide wave (CG) by evanescence, characterized in that the device also comprises a partial reflecting layer (CR) inserted between the lower confinement layer (CiC) and the guide layer (CG) and positioned facing the absorbent layer (Ab), said partial reflecting layer (CR) being made from a fifth material having a fifth index (n5), whose value is outside the range defined by the first index (n1) of the lower confinement layer (CiC) and the second index (n2) of the guide layer (CG).

5,193,132

METHOD OF COUPLING LIGHT VIA A COUPLER ON A FIBER OPTIC LIGHT GUIDE USING PHASE SPACE MATCHING

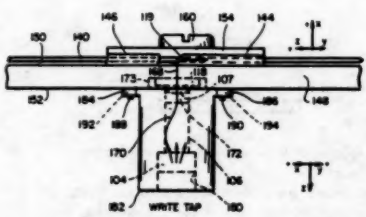
William D. Uken, Fremont, and William T. Link, Berkeley, both of Calif., assignors to Raynet Corporation, Menlo Park, Calif.

PCT No. PCT/US90/02449, § 371 Date Sep. 30, 1991, § 102(e) Date Sep. 30, 1991

Continuation-in-part of Ser. No. 503,064, Mar. 29, 1990, abandoned, which is a continuation of Ser. No. 346,185, May 2, 1989, abandoned. This PCT application May 2, 1990, Ser. No. 768,644

Int. Cl.[5] G02B *6/26, 6/42*

U.S. Cl. 385—32 **27 Claims**



13. An apparatus for coupling light between a light emitting device and a target optical device, comprising:

the light emitting device for emitting light;

the target optical device;

an optical path for guiding at least some of the emitted light to the target optical device;

means for altering a direction of propagation of the emitted light, the altering means including at least one third or higher order corrective lens, at least one of the devices comprising a bent optical fiber whereby light passes through a side of the fiber at a bend.

5,193,133

METHOD OF TERMINATING OPTICAL FIBER UTILIZING A PLASTIC ALIGNMENT FERRULE WITH POLISHING PEDESTAL

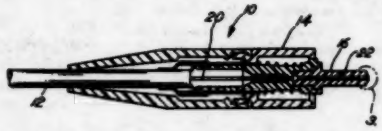
Philip W. Schofield, Batavia; Paul R. Stonikas, Darien, and James W. McGinley, Schaumburg, all of Ill., assignors to Methode Electronics, Inc., Chicago, Ill.

Filed Jan. 21, 1992, Ser. No. 823,305

Int. Cl.[5] G02B *6/26*; B29D *11/00*

U.S. Cl. 385—85 **5 Claims**

1. A method of making a fiber optic connector comprising the steps of forming a plastic ferrule comprising an elongated body having an opening therethrough, said opening having an entry end and an exit end, said opening being flared at the entry end for facilitating entry of a fiber, said ferrule having a raised pedestal surrounding the exit end of the opening, introducing a fiber into said opening for extension through said exit end and beyond said raised pedestal, bonding said ferrule to said fiber, cleaving the fiber, severing the free end of the fiber, and polishing the ferrule to remove the raised pedestal and provide a smoothly polished end surface on the ferrule.



5,193,134

GROOVED-CORE CABLE FOR USE WITH RIBBON OPTICAL FIBRES AND PROCESS TO MAKE THE SAME

Massimo Pizzorno, Milan, and Alessandro Ginocchio, Sesto S. Giovanni, both of Italy, assignors to Pirelli Cavi S.p.A., Milan, Italy

Filed Feb. 11, 1992, Ser. No. 834,005

Claims priority, application Italy, Mar. 8, 1991, MI91A 000597; Mar. 8, 1991, MI91A 000598

Int. Cl.[5] G02B *6/00, 6/36*

U.S. Cl. 385—105 **29 Claims**

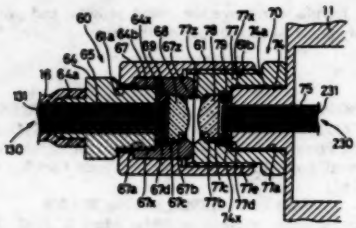
1. An optical fibre telecommunications cable comprising a plurality of ribbons including at least a first and a second ribbon (1*a*, 1*e*) of optical fibres (2), each provided with at least a primary layered coating (3) comprising a first layer (5), in contact with the optical fibre, having a lower modulus of elasticity than a second layer (6) external thereto, a housing structure (9) having at least one groove (10) forming at least a closed housing (10) for said ribbons, said housing having a bottom and extending in a helical manner around the groove axis and being closed to the outside by a wall (11), in which the ribbons are radially superposed at different radial distances from said axis to provide a radially outermost second ribbon (1*e*) and a radially innermost first ribbon (1*a*), ribbons at radially longer distances from said axis overlying ribbons at radially smaller distances from said axis and ribbons at radially smaller distances from said axis underlying ribbons at radially longer distances from said axis, each of said ribbons being in elastic longitudinal tension so that overlying ribbons apply pressure to underlying ribbons, and a pulling element (14), characterized in that said first ribbon (1*a*) is located in the housing (10) so that it can exert a first pressure of a predetermined value on the said bottom of said housing at a temperature of 20° C., and said second ribbon (1*e*) is located in the housing so that it can exert a second pressure lower than the first pressure on said first ribbon (1*a*), said value of said first pressure and the ratio between said second pressure and said first pressure being such that an important radial travel of both ribbons to the outside (11) of the housing (10) is prevented with a temperature decrease up to a predetermined value, and respectively, that said first ribbon (1*a*) is prevented from radially moving away from the housing (10) bottom by a distance greater than the radial travel of said second ribbon (1*e*).

5,193,135

OPTICAL CONNECTOR AND ENDOSCOPE WITH OPTICAL CONNECTOR

Kunihiko Miyagi, Wako, Japan, assignor to Kabushiki Kaisha Machida Seisakusho, Tokyo, Japan

Filed Oct. 7, 1991, Ser. No. 772,674
Claims priority, application Japan, Oct. 31, 1990, 2-113490[U]
Int. Cl.[5] G02B 23/26
U.S. Cl. 385—117 10 Claims



1. An optical connector comprising:

(a) a tubular connector body having a stopper portion and a first threaded portion formed on an outer periphery of said connector body, one end portion of a light guide being adapted to be inserted in and fixed to said connector body;

(b) a tubular retainer including an abutment portion, a second threaded portion which is formed on an inner periphery of a proximal end portion of said retainer and is threadedly engaged with said first threaded portion, and a radially inwardly-directed annular flange formed on the inner periphery of said retainer adjacent to an open distal end of said retainer, said retainer being threaded on said connector body to such an extent that said abutment portion is abutted against said stopper portion of said connector body;

(c) an optical element received in said retainer and disposed between said flange of said retainer and the one end face of said light guide; and

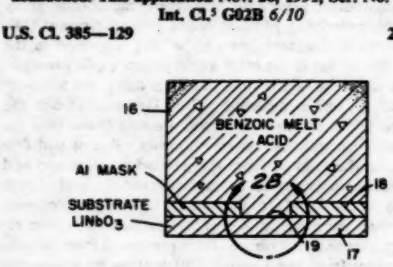
(d) an annular elastic member received in said retainer and disposed between said optical element and a distal end surface of said connector body, said elastic member urging said optical element against said flange of said retainer, thereby keeping said optical element away a predetermined distance from the one end face of said light guide.

5,193,136

PROCESS FOR MAKING MULTIFUNCTION INTEGRATED OPTICS CHIPS HAVING HIGH ELECTRO-OPTIC COEFFICIENTS

Chin L. Chang, West Covina; Daniel A. Niebauer, and Albert Choi, both of Woodland Hills, all of Calif., assignors to Litton Systems, Inc., Woodland Hills, Calif.

Continuation of Ser. No. 702,140, May 31, 1991, abandoned, which is a continuation of Ser. No. 428,174, Oct. 27, 1989, abandoned. This application Nov. 26, 1991, Ser. No. 799,716
Int. Cl.[5] G02B 6/10
U.S. Cl. 385—129 28 Claims



8. An integrated optics chip comprising a substrate formed from electro-optic material with at least one proton-exchanged optical waveguide formed in a surface of said substrate, said optical waveguide having:

proton-exchanged hydrogen ions substantially diffused into and below the surface of said optical waveguide;

a rhombohedral structure;

at least one input port to said at least one optical waveguide for light and at least one output port from said at least one optical waveguide for light;

a polarization extinction ratio of no more than about −55 dB;

coupling loses of not more than about −3 dB of optical power from said output port with respect to optical power into said input port; and

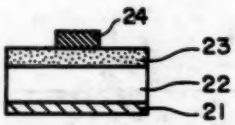
a restored electro-optic coefficient, said substrate being substantially free of stresses that lead to microcracking, and substantially free of microcracks, in the proton-exchanged waveguide regions of said substrate.

5,193,137

QUARTZ OPTICAL WAVEGUIDE AND METHOD FOR PRODUCING THE SAME

Sumio Hoshino; Hiroo Kanamori; Masumi Ito; Shinji Ishikawa, and Haruhiko Aikawa, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Sep. 25, 1991, Ser. No. 765,243
Claims priority, application Japan, Sep. 25, 1990, 2-251881
Int. Cl.[5] G02B 6/10, 6/26
U.S. Cl. 385—129 6 Claims



1. A quartz optical waveguide comprising:

a support;

a first quartz glass layer formed on said support;

a quartz glass core containing a functional material formed on said first quartz glass layer; and

a second quartz glass layer formed on said first quartz glass layer and said quartz glass core, said first and second quartz glass layers having a lower refractive index than that of said quartz glass core, said quartz glass core being surrounded by said first and second quartz glass layers.

5,193,138

OFF-PEAK THERMAL STORAGE SYSTEM PROVIDING A PLURALITY OF SELECTED TEMPERATURE OUTLETS

Steven M. Richey, 6960 W. Andrew Johnson Hwy., Talbot, Tenn. 37877; Richard E. MacDonald, 3117 Providence Cir., Morristown, Tenn. 37814-2584, and Jimmy F. Mathis, 512 Windridge La., Morristown, Tenn. 37814

Filed Apr. 16, 1991, Ser. No. 686,748
Int. Cl.[5] H05B 1/02; G05D 23/13; F24H 7/04
U.S. Cl. 392—341 10 Claims

1. A thermal storage system for storing thermal energy in the form of heated fluid to be used in exchange with a plurality of independent systems including potable water supplies and space heating systems, said thermal storage system comprising:

a storage receptacle for storing a selected volume of a selected heat transfer fluid, said selected volume of said selected heat transfer fluid defining a fluid level;

at least one heating element for heating said selected volume of said selected heat transfer fluid to a selected temperature;

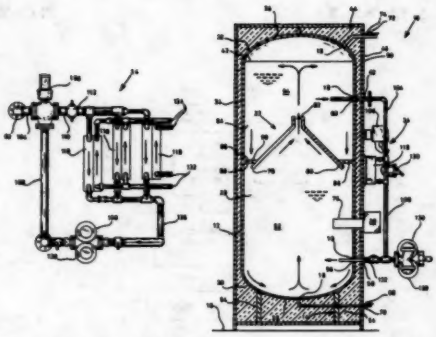
a pressurizer for pressurizing said storage receptacle to a

selected pressure to prevent flashing of said selected heat transfer fluid;

an outlet for dispensing said selected heat transfer fluid at said selected temperature to a selected location;

a plurality of heat exchangers, each of said plurality of heat exchangers in fluid communication with said outlet at said selected location for heating a selected fluid to a selected system output temperature, each of said plurality of heat exchangers defining a primary chamber and a secondary chamber, said primary chamber including inlet and outlet ports for fluid communication therethrough of said selected heat transfer fluid and said secondary chamber including inlet and outlet ports for fluid communication therethrough of said selected fluid, each said primary chamber defined by each of said plurality of heat exchangers being connected in parallel with each other, and at least one said secondary chamber defined by one of said plurality of heat exchangers being connected independently from all other said secondary chambers defined by all other said plurality of heat exchangers and in fluid communication with one of said plurality of independent systems;

a recirculation line for recirculating said selected heat transfer fluid evacuated from each of said plurality of heat exchangers through said first outlet port, said selected heat transfer fluid being evacuated at a reduced temperature as compared to said selected temperature;



a thermostatic mixing valve in fluid communication between said storage receptacle, each of said plurality of heat exchangers, and said recirculation line for mixing said selected heat transfer fluid at said selected temperature with said selected heat transfer fluid at said reduced temperature in selected proportions to control a temperature defined by said selected heat transfer fluid delivered to each of said plurality of heat exchangers;

a temperature sensor for monitoring said temperature of said selected heat transfer fluid and producing a signal dependent upon said temperature;

a temperature controller for receiving said signal produced by said temperature sensor and selectively enabling and disabling said thermostatic mixing valve, said temperature controller being operably dependent on said signal received from said temperature sensor; and

an inlet in fluid communication between said recirculation line and said storage receptacle for introduction of said selected heat transfer fluid at said reduced temperature into said storage receptacle for reheating.

5,193,139

HOUSEHOLD COFFEEMAKER

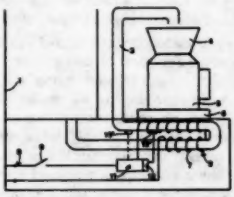
Patrice J. C. Schlettecatte, Alencon, France, assignor to Moulinex (Societe Anonyme), Bagnolet, France

Filed Mar. 25, 1991, Ser. No. 674,448

Claims priority, application France, Apr. 11, 1990, 90 04679

Int. Cl.[5] A47J 31/54

U.S. Cl. 392—480 **7 Claims**



1. In a household coffeemaker comprising a cold water reservoir (1) supplying a water heater (2) of the circulating type whose output is connected to a water channel (3) of a coffee filter (4) disposed above an infusion collector (5), and a timing element (12) that regulates the duration of an initial pre-steeping phase and a subsequent infusion stage by an open and closed condition respectively, said water heater comprising a heating resistance (7) whose supply circuit is connected to the terminals (8) of a source of alternating current; the improvement wherein said supply circuit of said heating resistance (7) comprises a device (11) for changing the electric power supplied, according to whether said timing element (12) is in said open or said closed condition, to said heating resistance (7) so as to supply said heating resistance (7), during said pre-steeping phase, with low power to obtain a low flow rate of hot water, and during said infusion phase, with greater power to obtain a greater flow rate of hot water.

5,193,140

EXCITATION PULSE POSITIONING METHOD IN A LINEAR PREDICTIVE SPEECH CODER

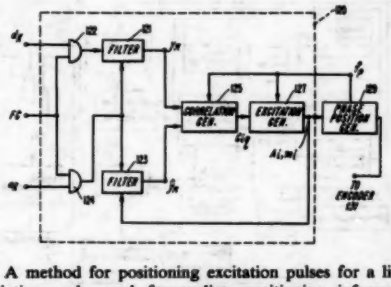
Tor B. Minde, Lulea, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Mar. 30, 1990, Ser. No. 501,767

Claims priority, application Sweden, May 11, 1989, 8901697

Int. Cl.[5] G10L 9/14

U.S. Cl. 395—2 **4 Claims**



1. A method for positioning excitation pulses for a linear predictive coder and for coding positioning information wherein a synthesized speech signal is formed from an original speech signal, comprising:

(a) determining a number of predictive parameters which characterize said original speech signal within a time frame interval;

(b) calculating a residual signal representing an error between said original speech signal and said synthesized speech signal within said frame interval and generating an

array of excitation pulses within said frame interval based on said residual signal and said predictive parameters;

(c) generating a weighted, speech-representative signal Y_n by weighting said residual signal with said predictive parameters;

(d) generating a weighted, synthesized speech signal $\hat{Y}_n$ by weighting a representative signal which represents an amplitude and a time position of one of said excitation pulses with said predictive parameters;

(e) correlating for each of a number of modification stages i said weighted speech-representative signal Y_n with said weighted synthesized speech signal $\hat{Y}_n$ to determine a difference signal for each of said stages;

(f) determining for each of said stages a candidate for an excitation pulse representing an amplitude A_i and a time position m_i from said correlation of that stage, determining the minimum value of said difference signal among the difference signals for all candidates and selecting the candidate which corresponds to said minimum value to obtain the amplitude A_{mp} and the time position m_p for one of said excitation pulses, and repeating the pulse candidate determination procedure for a desired number of excitation pulses in a frame disregarding excitation pulses determined in previous modification stages;

(g) dividing a total number of possible time positions n for excitation pulses within said time frame into a number of phase positions n_f each phase position including a number of phases f such that $n=n_fF+f$, where F is a total number of phases f in a particular phase position n_f;

(h) determining according to steps (d) through (f) an amplitude and a time position of a first and subsequent excitation pulses among time positions n having corresponding phases in each phase position but not occupied by time positions of preceding excitation pulses until a preset number of excitation pulses determined within said time frame interval have been positioned;

(i) coding each determined phase position n_f separately to form separate code words; and

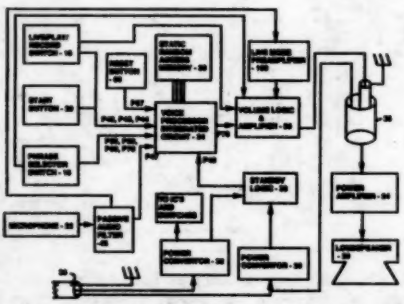
(j) coding said determined phases together to form a single code word.

5,193,141

VEHICULAR VOICE STORAGE, PLAYBACK, AND BROADCASTING DEVICE

Arthur L. Zwern, 170 S. Morrison Ave., San Jose, Calif. 95126

Filed Nov. 19, 1990, Ser. No. 615,212
Int. Cl.[5] G10L *9/00*; G11C *15/00*
U.S. Cl. 395—2 **16 Claims**



1. A device for storing and replaying speech in vehicles, comprising:

input means being disposed in said vehicle for receiving a plurality of audio messages from a user;

conversion means for converting said audio messages into electronic signals representative thereof;

memory storage means for the retained storage of said electronic signals, said memory storage means being capable of storing said electronic signals in a randomly accessible format;

memory address means acting in coordination with said memory storage means to provide a known address within said memory storage means at which said electronic signals are stored, each of said plurality of messages having a unique address within said memory storage means;

replay means being activatable by said user to cause the outputting from said memory storage means of user selected portions of said electronic signals which portions represent one of said audio messages; and

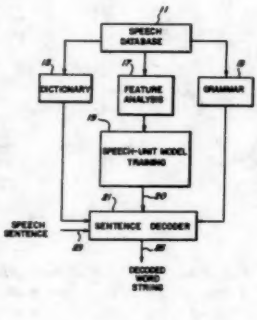
message broadcast means being disposed in said vehicle and being activated by said replay means and functioning to broadcast said audio messages externally from said vehicle.

5,193,142

TRAINING MODULE FOR ESTIMATING MIXTURE GAUSSIAN DENSITIES FOR SPEECH-UNIT MODELS IN SPEECH RECOGNITION SYSTEMS

Yunxin Zhao, Santa Barbara, Calif., assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 15, 1990, Ser. No. 613,352
Int. Cl.[5] G10L *9/00*
U.S. Cl. 395—2 **30 Claims**



1. A speech recognition system including a training module for estimating Gaussian densities for use in speech-unit models of the speech recognition system, said speech recognition system comprising:

means for receiving an input speech signal;

segmentation means for segmenting said speech signal into a plurality of speech units, each speech unit having a plurality of states, each state of each speech unit being a segment of said signal, each segment including a plurality of frames;

means for grouping all segments corresponding to like speech unit states for like speech units into respective sets of segments for all states of all speech units;

means for estimating parameters defining a Gaussian density for each segment of each set of segments;

means for merging said Gaussian densities of each set into a mixture Gaussian density for the set; and

means for using said mixture Gaussian densities for identifying speech units of additional input speech signals.

5,193,143

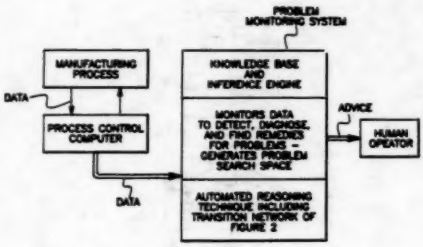
PROBLEM STATE MONITORING

William F. Kaemmerer, Minneapolis, Minn., and James R. Allard, Brookline, Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 363,374, Jun. 2, 1989, abandoned, which is a continuation of Ser. No. 143,898, Jan. 12, 1988, abandoned. This application Nov. 7, 1989, Ser. No. 433,401

Int. Cl.[5] G06F *15/00*

U.S. Cl. 395—51 4 Claims


PROBLEM MONITORING SYSTEM
MANUFACTURING PROCESS
DATA
PROCESS CONTROL COMPUTER
DATA
KNOWLEDGE BASE AND INFERENCE ENGINE
MONITORS DATA TO DETECT, DIAGNOSE, AND FIND REMEDIES FOR PROBLEMS - GENERATES PROBLEM SEARCH SPACE
AUTOMATED REASONING TECHNIQUE INCLUDING TRANSITION NETWORK OF FIGURE 2
ADVICE
HUMAN OPERATOR

1. A method for use with an expert system for diagnosing and providing remedies for problems incurred in the operation of a manufacturing process, wherein said manufacturing process has a plurality of data points from which the occurrence of said problems may be determined, and wherein said expert system has an inference engine means for inferencing which interfaces with and monitors said data points,

said inference engine means being operable relative to said manufacturing process to facilitate (1) the determination of an unconfirmed root problem associated with one of said data points, designated a root node, and (2) the generation of a hierarchical problem space relative to said root node listing a set of descendant nodes having unconfirmed operating problems associated therewith potentially causing said root problem;

and wherein said inference engine means has available an investigation procedure during the course of the use of such procedure a determination can be made for each of said unconfirmed operating problems whether it is an actual problem and whether said inference engine means has a remedy for said actual problem,

said method for use with such an expert system comprising the steps of:

A. monitoring said manufacturing process and reading said data points with the use of said inference engine means;

B. determining from said data point readings in association with said inference engine means the existence of any root problem and generating in association with said inference engine means a hierarchical problem space listing of a set of descendant unconfirmed operating problems potentially causing said root problem;

C. determining for each of said unconfirmed operating problems in association with said investigation procedure (1) whether said unconfirmed operating problem is in fact a cause of said root problem and (2) whether said inference engine has a remedy for said cause of said root problem;

D. providing a transition network having a format of transition states for said root problem during the course of said investigation procedure from the time said root problem is detected until it is either resolved or it is determined to be irresolvable; and

E. returning to step A.

5,193,144

FUZZY SYSTEM

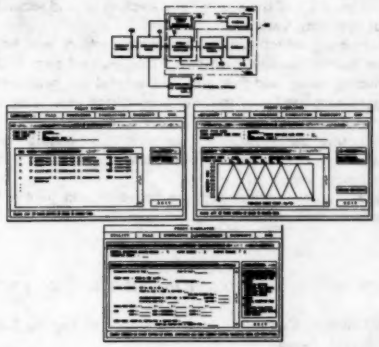
Yasuhiro Tsutsumi, and Yutaka Ohtsubo, both of Takatsuki, Japan, assignors to Shimano, Inc., Osaka, Japan

Filed Dec. 12, 1989, Ser. No. 449,717

Claims priority, application Japan, Dec. 14, 1988, 63-315360; Feb. 7, 1989, 1-28373; Mar. 17, 1989, 1-67161

Int. Cl.[5] G06F *15/00, 9/44*

U.S. Cl. 395—76 2 Claims



2. A fuzzy control system development support apparatus comprising:

a control objective model to be controlled in a simulation;

a knowledge base storing therein fuzzy rules and membership functions previously set;

a display means for enabling editing of said fuzzy rules and said membership functions stored in said knowledge base;

translation means for translating said knowledge base into an arbitrary language;

means for generating and supplying a pseudo input;

means for performing fuzzy inferences on said pseudo input supplied from said generating means and feedback from said model in accordance with said fuzzy rules and membership functions stored in said knowledge base and for supplying the inference result to said model; and

means for outputting at least one status of said model controlled by said fuzzy inference performing means.

5,193,145

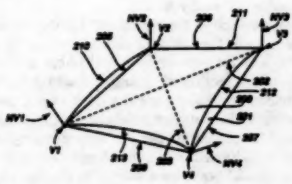
METHOD AND APPARATUS FOR PRODUCING A VISUALLY IMPROVED IMAGE IN A COMPUTER SYSTEM

Kurt Akeley, Mountain View, Calif., assignor to Silicon Graphics, Inc., Mountain View, Calif.

Continuation of Ser. No. 480,729, Feb. 16, 1990, abandoned. This application Mar. 13, 1992, Ser. No. 851,264

Int. Cl.[5] G06F *15/72*

U.S. Cl. 395—123 12 Claims



1. A method for providing a visually improved image on a video display in a computer controlled video display system, wherein said image is generated at least in part from a collec-

tion of triangular primitives, said method including a process for converting a quadrilateral polygon in 3-dimensional space to a pair of triangles, said quadrilateral polygon having a normal unit vector associated with each of the four vertices of said quadrilateral polygon, two of said vertices forming a first pair of opposing vertices and the other two of said vertices forming a second pair of opposing vertices, said process comprising the steps of:

computing a first dot product of the normal unit vectors of said first pair of opposing vertices and computing a second dot product of the normal unit vectors of said second pair of opposing vertices;

determining which pair of opposing vertices will be connected to thereby form two triangles, said step of determining using said first and said second dot products in a predetermined way to determine which pair of opposing vertices will be connected;

connecting the vertices of the pair of opposing vertices which were determined to be connected in said determining step; and

displaying two regions representative of said pair of triangles on said video display.

5,193,146

PULSE WIDTH MODULATION CONTROL SYTEM FOR A MOTOR

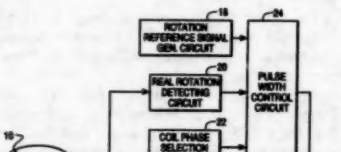
Keiichi Kohno, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 20, 1990, Ser. No. 570,022

Claims priority, application Japan, Aug. 18, 1989, 1-213467

Int. Cl.[5] H02P *5/17*

U.S. Cl. 388—811 **16 Claims**



1. A pulse width modulation (PWM) control system for a DC motor having a plurality of stator coils and rotor magnets, and having a position sensor for sensing a rotational position of the rotor, said PWM control system comprising:

(a) stator coil phase detecting means operatively connected to the position sensor for detecting a stator coil phase based on a signal from the position sensor and for providing a detecting signal based on the detected stator coil phase;

(b) rotation reference signal generating means for generating a rotation reference signal;

(c) real rotation detecting means for detecting a real rotation of the rotor and for providing an index signal based on said detection of real rotation;

(d) coil phase selection timing means for determining selection of timing of the stator coil phase based on the detecting signal and for providing a coil phase selecting signal based on said selection of timing and said detecting signal;

(e) pulse width control means for detecting a phase difference between the rotation reference signal and the index signal, and for providing the PWM control signal with the determined pulse width in synchronization with the determination of said coil phase selection timing; and

(f) motor driving means for selecting, based on the PWM control signal, at least one of the stator coils based on the detecting signal and for supplying power to the selected coil during the PWM control signal.

5,193,147

DOCUMENT PROCESSING APPARATUS

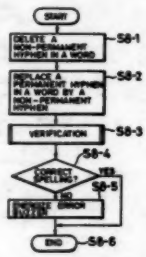
Takashi Amari, Tokyo, and Hideo Shibaoka, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 569,987, Aug. 20, 1990, which is a division of Ser. No. 484,488, Feb. 26, 1990, Pat. No. 4,974,195, which is a continuation of Ser. No. 63,404, Jun. 18, 1987, abandoned. This application Mar. 30, 1992, Ser. No. 860,588

Claims priority, application Japan, Jun. 20, 1986, 61-145623; Jun. 20, 1986, 61-145624

Int. Cl.[5] G06F *9/20, 5/00*

U.S. Cl. 395—145 **14 Claims**



1. An apparatus comprising:

input means for inputting character data;

memory means for storing the character data input from said input means;

printing means for printing the character data stored in said memory means;

print width memory means for storing a print width defined by left and right margins; and

control means for controlling the feeding of a line of the character data by controlling said printing means to insert and print a hyphen when a word comprising some of the character data stored in said memory means exceeds the print width stored in said print width memory means,

wherein when a former half portion of a word exceeds the print width, said control means discriminates whether a hyphen exists in the former half portion of the word.

5,193,148

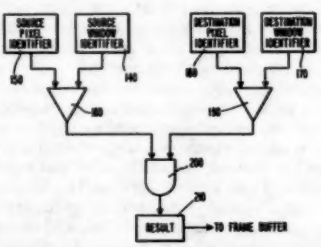
METHOD AND APPARATUS FOR PIXEL CLIPPING SOURCE AND DESTINATION WINDOWS IN A GRAPHICS SYSTEM

Byron A. Alcorn, Fort Collins; Robert W. Cherry, Loveland; Mark D. Coleman, and Brian D. Rauchfuss, both of Fort Collins, all of Colo., assignors to Hewlett Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 494,992, Mar. 16, 1990, abandoned. This application Dec. 4, 1991, Ser. No. 803,742

Int. Cl.[5] G06F *15/66*

U.S. Cl. 395—157 **28 Claims**



27. A computer graphics system, comprising:

(a) a frame buffer, having a source area and a destination

area, for storing pixel data, said pixel data including a window identifier and a pixel identifier for each pixel, said window identifiers each comprising data indicative of one of a plurality of visible windows associated with said graphics system;

(b) a window cache, coupled to said frame buffer, comprising first and second memory areas;

(c) means for reading a block of pixel data from said source area into said first memory area according to a plurality of source tiles;

(d) means for reading a block of pixel data from said destination area into said second memory area according to a plurality of destination tiles;

(e) means for comparing pixel window identifiers read from the frame buffer with a pixel window identifier previously stored in the memory to determine whether the pixel window identifiers read from the frame buffer match the pixel window identifier previously stored in the memory;

(f) means for discarding each pixel whose corresponding window identifier does not match the previously stored window identifier with which the corresponding window identifier was compared; and

(g) means for updating the frame buffer with the pixel data not discarded.

5,193,149

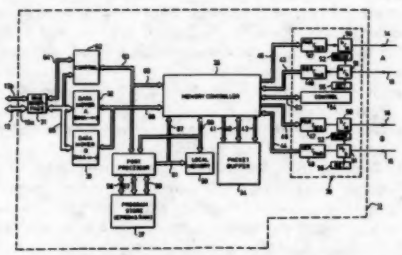
DUAL-PATH COMPUTER INTERCONNECT SYSTEM WITH FOUR-PORTED PACKET MEMORY CONTROL

Desireé A. Awiszio, Worchester; Satish Soman, Hudson, and Paul H. Clark, Westborough, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 335,048, Apr. 7, 1989, abandoned. This application Oct. 8, 1991, Ser. No. 774,725

Int. Cl.[5] G06F *13/18*

U.S. Cl. 395—200 **51 Claims**



1. A computer interconnect system having a plurality of nodes, each one of said nodes comprising:

a) a CPU or the like having a system bus;

b) a packet buffer;

c) a data mover means coupling said system bus to said packet buffer by a first path and coupling said packet buffer to said system bus by a second path for transferring packets of data from said system bus to said packet buffer via said first path and including means for simultaneously transferring packets of data from said packet buffer to said system bus via said second path, the data mover accessing said packet buffer on demand;

d) a serial link for transmitting packets to another of said nodes and receiving packets from another of said nodes;

e) and packet buffer read/write control means coupled to said serial link and to said data mover; said read/write control means including means for storing packets received by said serial link into said packet buffer and means for accessing packets from the packet buffer for transmitting on said serial link; said read/write control means including means for controlling access to said packet buffer by said means for storing and means for accessing and said data mover, said means for controlling access including means for interleaving said storing packets and accessing packets for said means for storing and means for accessing with said transferring packets of data mover to grant access to said packet buffer for said means for storing and means for accessing during a transfer of a packet to or from said packet buffer by said data mover means.

5,193,150

DATA TRANSFER METHOD, DATA TRANSFER APPARATUS AND INFORMATION PROCESSING SYSTEM

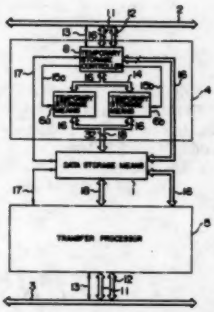
Ikuo Takeuchi; Kohji Kamejima; Tomoyuki Hamada, all of Ibaraki, and Norihisa Miyake, Matsudo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 1, 1989, Ser. No. 401,861

Claims priority, application Japan, Sep. 5, 1988, 63-221851

Int. Cl.[5] G06F *13/14*

U.S. Cl. 395—200 **3 Claims**



1. An apparatus for transferring data, of a first data length of n bits, where n is an integer, between at least two systems each connected to a communication bus, each of said communication buses including a first data bus having a capacity of a second data length of n/N bits, where N is an integer, wherein data having the first data length is transferred between the at least two systems through said communication buses and data storage means connected between said communication buses, said apparatus comprising:

plural transfer processing means corresponding to said at least two systems, each transfer processing means being connected between said data storage means and one of said communication buses, for temporarily storing data having the first data length transmitted from one of said at least two system through the one communication bus connected thereto when said data is to be transferred from the one system connected to the one communication bus to the other system of said at least two systems connected to another of said communication buses and for temporarily storing data having the first data length received from the data storage means when said data is to be transferred from the other system to the one system, said each transfer processing means comprises:

temporary storage means having a capacity capable of storing at least (N−1) data blocks of data of the first data length having N data blocks, said temporary storage means being connected to said data storage means through a second data bus having a capacity of the first data length, and

temporary storage controlling means connected to said first data bus of the one communication bus and said temporary storage means for controlling transfer of data between the one system and said data storage means wherein, when the data of the first data length is to be transferred from the one system to the other system, at least (N−1) data blocks before a last data block of said

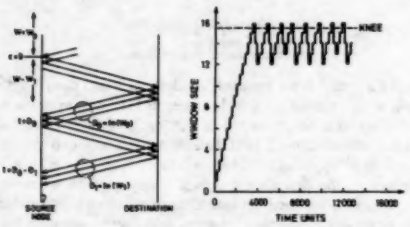
data of the first data length received from the one system through the first data bus of the one communication bus are stored in said temporary storage means, and when said last data block is received, said last data block and said (N−1) data blocks which are read out from said temporary storage means, are together as said data of the first data length transmitted through said second data bus to the data storage means for storage therein, and when said data of the first data length is to be transferred from the other system to the one system, N data blocks stored in the data storage means constituting said data of the first data length are together read out of said data storage means, and then sequentially transmitted one block by one block to the one system through said first data bus, while temporarily storing in said temporary storage means at least (N−1) data blocks of said data, which are to be transmitted succeeding to a first one of the N data blocks.

5,193,151

DELAY-BASED CONGESTION AVOIDANCE IN COMPUTER NETWORKS

Rajendra K. Jain, Sudbury, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Aug. 30, 1989, Ser. No. 400,858
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—200 **27 Claims**



8. A method of operating a computer network, said computer network including a source node and a destination node, wherein said source node includes a processor, comprising the steps of:

a) sending first data from said source node to said destination node by said network at a first loading level and receiving at said source node a first acknowledgement from said destination node of said network, said first acknowledgement confirming receipt of at least part of said first data; and measuring by said processor a first delay between said sending said first data and said receiving said first acknowledgement;

b) measuring by said processor in said source node a second delay between sending second data from said source node to said destination node and receiving at said source node a second acknowledgement from said destination node, said second acknowledgement confirming receipt of at least part said second data, said second data being sent by said source node with a second loading level different from said first loading level;

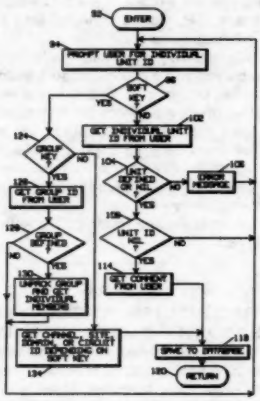
c) automatically changing the loading level by said processor of said source node, in response to a function of the difference in said measured first and second delays, said step of changing including decreasing from said second loading level if said second delay is greater than said first delay and increasing from said second loading level if said second delay is less than said first delay.

5,193,152

NETWORK MANAGEMENT SYSTEM WITH GROUP NAMING

Daniel L. Smith, Sunrise, Fla., assignor to Racal-Datacom, Inc., Sunrise, Fla.

Continuation of Ser. No. 431,416, Nov. 3, 1989, abandoned. This application Apr. 24, 1992, Ser. No. 875,004
Int. Cl.[5] H04L *12/24*
U.S. Cl. 395—200 **3 Claims**



1. In a computer based data communications network management system for managing a plurality of network units disposed in a data communications network, a method for allowing a user to define a plurality of groups of said network units in a computer database stored in a computer for said network management system; each of said groups being defined according to any user defined criteria, said computer being located at a single location, the method comprising in combination the steps of:

each of said network units having a preassigned individual unit identifier;

said computer prompting said user for an external group name for one of said groups;

in response to said user inputing said group external group name, said computer creating an internal group name for said one group to be used in addressing said one group;

said computer repeatedly prompting said user for a member identifier identifying at least one member of said one group; said member identifier, in the case of said member being one of said network units, being said individual unit identifier for said one network unit; said member identifier, in the case of said member being a predefined collective of said network units, being a predefined collective name;

in response to said user inputing said member identifier, said computer adding said individual unit identifier to a list of said network units to be included in said one group, in the case of said member identifier being for one of said network units, and said computer adding to said list a plurality of said individual unit identifiers for said network units of said predefined collective name, in the case of said member identifier being for said predefined collective;

storing said list along with said internal name in said computer database;

in response to said user inputting a group command to said computer specifying said one group as a destination for said group command; said computer converting said group command to a plurality of individual commands, each said individual command specifying one of said network units which are members of said one group as a destination for said each individual command; there being

one of said individual commands for each of said members of said one group; and

said network management system transmitting each said individual command to one of said network units.

5,193,153

SYSTEM FOR DETECTING OVERWRITING OF DATA IN A BUFFER MEMORY, PARTICULARLY FOR A DATA SWITCH

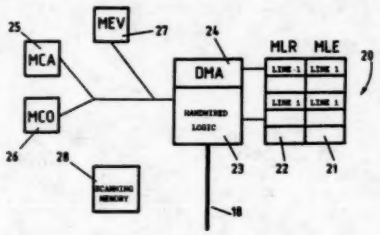
Michel Soutoul, Sceaux, France, assignor to Alcatel CIT, Paris, France

Filed Dec. 29, 1989, Ser. No. 459,407

Claims priority, application France, Dec. 30, 1988, 88 17503

Int. Cl.[5] G06F *12/16*; G11C *21/00, 29/00*

U.S. Cl. 395—250 **10 Claims**



1. A system for detecting overwriting of data in a buffer memory, said buffer memory being assigned to receive data supplied by a transmission line where said data is to be processed by a data switch, the buffer memory being a rotating FIFO memory accessed, on the one hand, by first means for writing data originating from a reception line, said writing being performed as a function of the rate at which said data is supplied, and said first means being able to overwrite data, and, on the other hand, by second means for reading the data in order to direct said data toward processing means within the switch, said reading being under the control of a sequencing of the processing means,

wherein the system further includes description means for describing the status of data locations in the buffer memory, by providing information indicating an unoccupied location where data has been read, a valid occupied location where data has not yet been read, and a non-valid occupied location indicating a location which has been overwritten,

and wherein said description means cooperates with said first means for writing and said second means for reading the data in the buffer memory, in order to update said information provided by said description means of the status of the data locations in the buffer memory.

5,193,154

BUFFERED PERIPHERAL SYSTEM AND METHOD FOR BACKING UP AND RETRIEVING DATA TO AND FROM BACKUP MEMORY DEVICE

Hiroyuki Kitajima; Akira Yamamoto, both of Yokohama; Takashi Doi, Hadano, and Masafumi Nozawa, Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 216,604, Jul. 8, 1988, abandoned. This application Oct. 25, 1991, Ser. No. 783,718

Claims priority, application Japan, Jul. 10, 1987, 62-170946

Int. Cl.[5] G06F *13/00, 11/00*; G11C *7/00*

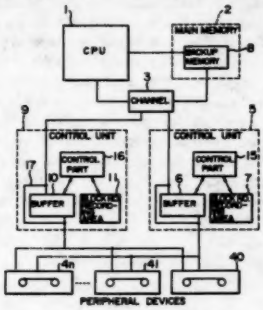
U.S. Cl. 395—250 **5 Claims**

1. A buffered peripheral system which is connected to a central processing unit through a channelling means, comprising:

a peripheral device;

a backup memory means for storing blocks of data written by said central processing unit, which are to be written to said peripheral device in accordance with a command from said central processing unit;

a control unit, connected between said channelling means and said peripheral device, said control unit further comprising a buffer memory means for temporarily storing the block of data which is to be written to said peripheral device a recording means for recording a block number corresponding to a most recently written block of data in



said peripheral device from said buffer memory means, and said control unit comprising a control means for issuing a command necessary to write said block of data stored in the buffer memory means to said peripheral device, including the block number associated with the block of data stored in said buffer memory means; and

means for deleting the block of said which has been previously written to said peripheral device from said backup memory means.

5,193,155

Patent Not Issued For This Number

5,193,156

DATA PROCESSOR WITH PIPELINE WHICH DISABLES EXCEPTION PROCESSING FOR NON-TAKEN BRANCHES

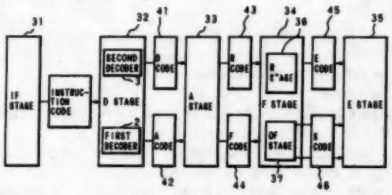
Toyohiko Yoshida, and Masahito Matuo, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 17, 1989, Ser. No. 312,554

Claims priority, application Japan, Feb. 23, 1988, 63-40026

Int. Cl.[5] G06F *9/38*

U.S. Cl. 395—375 **6 Claims**



1. A data processor having a pipeline processing mechanism for processing instructions, including a conditional branch instruction which is an instruction to branch to a target instruction provided a branch condition is fulfilled, comprising:

an address calculation stage

a first pipeline stage which has means for decoding said conditional branch instruction, a branch prediction mechanism, means for judging whether pre-branching is executed or not corresponding to indication of said branch prediction mechanism, means for detecting an exception generated at pre-branching, and means for outputting a code to the address calculation stage

a second pipeline stage coupled to receive information from said first pipeline stage which has means for judging whether branching is excused or not corresponding to the branch condition of said conditional branch instruction, and activatable means for starting exception processing with respect to said exception, and

means, coupled to said first and second pipeline stages, for transmitting an indication that said exception is detected from said first pipeline stage to said second pipeline stage,

wherein, when said indication is transmitted to said second pipeline stage, and after said pre-branching is executed said second pipeline stage activates said activatable means for starting exception processing when "execution" of said branch instruction causes branching to said target instruction and does not activate said activatable means for starting exception processing when said execution of said branch instruction does not cause branching to said target instruction.

5,193,157

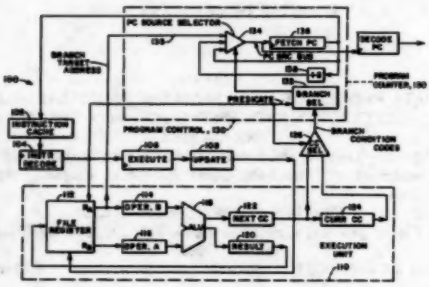
PIPLINED SYSTEM INCLUDES A SELECTOR FOR LOADING CONDITION CODE EITHER FROM FIRST OR SECOND CONDITION CODE REGISTERS TO PROGRAM COUNTER

Russell G. Barbour, Framingham; Carl A. Soeder, Boxborough, both of Mass., and Stephen J. Ciavaglia, Nashua, N.H., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 259,345, Oct. 18, 1988, abandoned. This application Sep. 27, 1991, Ser. No. 769,165

Int. Cl.[5] G06F 9/38

U.S. Cl. 395—375 **3 Claims**



1. A computer system comprising:

a processor;

a first condition code register having a first port coupled to a first port of said processor;

a second condition code register having a first port coupled to a second port of said first condition code register wherein said first condition code register is capable of holding a first condition code generated as a result of said processor executing a first instruction and wherein upon said processor executing a second instruction said first condition code is automatically transferred from said first condition code register to said second condition code register and a second condition code is automatically transferred to said first condition code register;

a program counter unit having a first port; and

a condition code selector, having a first port coupled to the second port of said first condition code register and a second port coupled to the second port of said second condition code register and a third port coupled to the first port of said program counter unit, for selectively providing a first one of said first and second condition codes to said program counter unit from a first one of said first and second condition code registers.

5,193,158

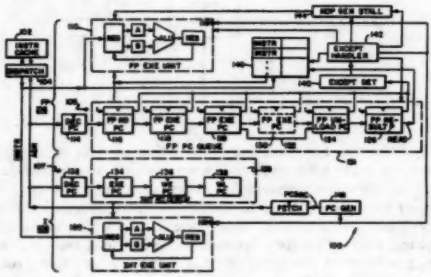
METHOD AND APPARATUS FOR EXCEPTION HANDLING IN PIPELINE PROCESSORS HAVING MISMATCHED INSTRUCTION PIPELINE DEPTHS

Daryl F. Kinney, Hopkinton; Anthony N. Drogaris, Wellesley; Christopher H. Mills, Chelmsford; Michael Kahalyan, East Bridgewater, and John Manton, Marlboro, all of Mass., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 259,793, Oct. 19, 1988, abandoned. This application Oct. 18, 1991, Ser. No. 780,527

Int. Cl.[5] G06F 9/38, 15/16

U.S. Cl. 395—375 **11 Claims**



1. Apparatus for executing a plurality of pipelined instructions, comprising:

an instruction source for providing pipelined instructions having variable length execution cycle times and including at least one short instruction and at least one long instruction;

a first pipelined processor, coupled to said instruction source, for executing a first sequence of said pipelined instructions, said first pipelined processor beginning execution of said at least one short instruction after beginning execution of said at least one long instruction, said first pipelined processor including

detection means for detecting an exception caused by an excepted instruction of said first sequence of pipelined instructions being executed, said detection means detecting said exception after said at least one short instruction has completed execution;

first inhibit means, coupled to said detection means and responsive to said detected exception, for inhibiting further execution of said excepted instruction;

identification means, coupled to said detection means and responsive to said detected exception, for identifying at least one pending instruction of said first sequence of pipelined instructions being executed, said at least one pending instruction including said at least one long instruction;

second inhibit means, responsive to the identification means, for inhibiting further execution of said at least one pending instruction;

exception handler means , coupled to said detection means and responsive to said detected exception, for saving states of said first pipelined processor, for serving said exception and for restoring the saved states of said first pipelined processor; and

re-execution means, coupled to said first and second inhibit means, and responsive to said exception handler means and said identification means, for causing said first pipelined processor to re-execute said excepted instruction and said at least one pending instruction in an order corresponding to said first sequence of pipelined instructions, said re-execution means precluding re-execution of said completed at least one short instruction, wherein said first pipelined processor re-executes only said excepted instruction and said at least one pending instruction.

5,193,159

MICROPROCESSOR SYSTEM

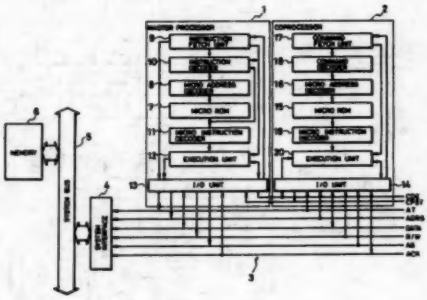
Kouzi Hashimoto, Mitaka; Atsushi Hasegawa, Koganei; Ikuya Kawasaki, Kodaira, and Kazuhiko Iwasaki, Hachiohji, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Microcomputer Engineering, Ltd., Kodaira, both of Japan

Continuation of Ser. No. 100,757, Sep. 24, 1987, abandoned. This application Jun. 3, 1991, Ser. No. 709,783

Claims priority, application Japan, Sep. 24, 1986, 61-223587

Int. Cl.[5] G06F *15/16*

U.S. Cl. 395—375 **35 Claims**



1. A microprocessor system comprising:

a bus;

a coprocessor coupled to said bus; and

a master processor coupled to said bus for executing a bus access cycle for said coprocessor; and

an external device coupled to said bus,

said coprocessor including first judge means for judging a completion of a sequence of data transfer operations effected between an internal section of said coprocessor and said external device with respect thereto; and

said master processor including second judge means for judging a completion of said sequence of data transfer operations independently of said first judge means, wherein said second judge means effects said judging of the completion of said sequence of data transfer operations, in said second judging means, based on a count of said data transfer operations, wherein said first judge means and said second judge means each are find first set bit circuits respectively disposed in said coprocessor and said master processor,

each said find first set bit circuit including means for effecting for each data transfer operation a code inversion on a predetermined code bit included in a plurality of bit sets of data transferred in said each data transfer operation, which bit sets are applied to each said find first set bit circuit so as to update said data of said plurality of bit sets, and means for effecting a judgement of a completion of operations for said each data transfer operation based on a condition that said updated data transferred in said each data transfer operation does not include said predetermined code bit.

5,193,160

ADDRESS TRANSLATION SYSTEM WITH REGISTER STORING SECTION AND AREA NUMBERS

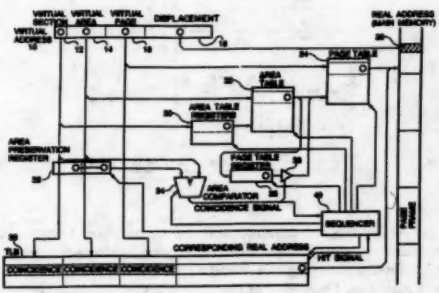
Masashi Tsubota, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 5, 1990, Ser. No. 474,261

Claims priority, application Japan, Feb. 3, 1989, 1-24859

Int. Cl.[5] G06F *12/08, 12/10*

U.S. Cl. 395—400 **3 Claims**



1. An address translation system for converting a virtual address including a virtual section number, a virtual area number and a virtual page number into a real address, said address translation system comprising:

a plurality of stages of tables, each including at least one area table and at least one page table;

a translation look-aside buffer having a plurality of entries each storing a virtual section number, a virtual area number and a virtual page number;

an area preservation register for preserving a virtual section number and a virtual area number of a given virtual address when a new entry is registered into the translation look-aside buffer;

a table register for preserving an output of an area table selected when said new entry is registered into said translation look-aside buffer; and

an area comparator for comparing a content of said area preservation register with a virtual section number and a virtual area number of a given virtual address,

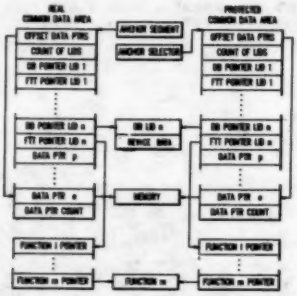
wherein, when the translation look-aside buffer is retrieved on the basis of the given virtual address, and an entry having the same virtual section number, virtual area number and virtual page number as those of the given virtual address is not found, the area comparator is used for comparing the content of the area preservation register with the virtual selection number and the virtual area number of the given virtual address, and if coincidence is detected by the comparator, an address translation is performed by accessing a page table on the basis of the page table information preserved in the page table register, without accessing the area table.

5,193,161

COMPUTER SYSTEM HAVING MODE INDEPENDENT ADDRESSING

Richard Bealkowski, Delray Beach; Richard A. Dayan; David J. Doria; Scott G. Kinnear; Jeffrey I. Krantz, all of Boca Raton, Fla.; Robert B. Livermaa, Raleigh, N.C.; Guy G. Sotomayor, West Palm Beach, Fla.; Donald D. Williams, and Gary A. Vaiskauckas, both of Boca Raton, Fla., assignors to International Business Machines Corp., Armonk, N.Y.

Continuation of Ser. No. 30,789, Mar. 27, 1987, Pat. No. 4,928,237. This application May 18, 1990, Ser. No. 525,792
The portion of the term of this patent subsequent to May 22, 2007, has been disclaimed.
Int. Cl.[5] G06F *12/00, 9/445*
U.S. Cl. 395—400 18 Claims



1. An addressing arrangement for a computer system that includes an addressable memory having addresses within a predefined addressing range and a system processor capable of addresing said memory in two distinctly different addressing modes, including a first mode in which said system processor is capable of addressing only a discrete sub-portion of said predefined addressing range and a second mode in which said processor is capable of addressing all of said predefined addressing range, said addressing arrangement comprising:

means for assigning selected first and second storage spaces in said memory as respective first and second common data areas for storing pointers to be used by said system processor in association with said first and second modes, respectively;

means for assembling a plurality of pointers in said common data areas, each of said pointers in said first common data area having an equivalent pointer in said second common data area, each said equivalent pointer, when accessed by said system processor in said second mode, effectively pointing said processor to an address within said sub-portion of said addressing range which is the same as the address to which the processor would be pointed if it had accessed the respective equivalent pointer in said first common data area in the first mode; and

means for locating said first and second common data areas comprising:

a first anchor pointer pointing to said first common data area such that when the system processor is in the first operating mode said processor forms addresses by first accessing the first common data area to retrieve a pointer that points to a predefined address in said sub-portion of said addressing range; and

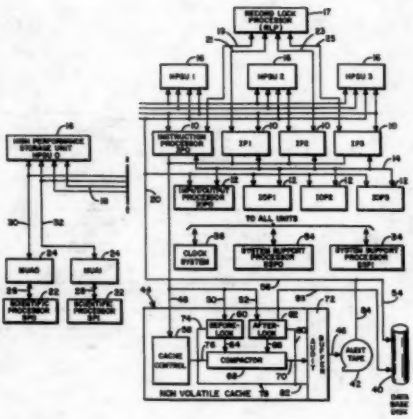
a second anchor pointer pointing to said second common data area such that when the system processor is in the second operating mode, the system processor addresses the second common data area to gain access to a pointer which, if equivalent to a pointer in said first common data area, effectively points to the same predefined address in said sub-portion of said addressing range as the equivalent pointer in said first common data area; whereby in response to a memory access request in either operating mode of the system processor, said assigning means steers the system processor to address the same location in memory without the system processor switching modes.

5,193,162

CACHE MEMORY WITH DATA COMPACTION FOR USE IN THE AUDIT TRAIL OF A DATA PROCESSING SYSTEM HAVING RECORD LOCKING CAPABILITIES

Donald T. Bordsen, St. Paul; Thomas P. Cooper, New Brighton; Robert F. Esson; Michael J. Hill, both of Vadnais Heights; John R. Jordan, St. Paul; Joseph E. Kessler, St. Anthony; Dennis R. Konrad, Welch; Ralph E. Sipple, Shoreview; Robert E. Swenson, Mendota Heights; James F. Torgerson, Anoka, and Anthony P. vonArx, New Brighton, all of Minn., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Nov. 6, 1989, Ser. No. 432,421
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—425 1 Claim



1. In a data processing system comprising a plurality of processing means each of which comprises a processing storage means, and each of which may request an object be locked and thus become a requesting processing means, object locking and unlocking means coupled to said processing means for first locking and then unlocking selected ones of data base objects for processing purposes, as requested by said requesting processing means, data base storage means coupled to said object locking means and said processing means for storage of said data base objects which has a first access time, read means for supplying a before-look image of a locked object to the processing storage means of said requesting processing means, write means for supplying information regarding said before-look image of said locked object in said processing storage means to said processing means for creating an after-look image in the processing storage means of said requesting processing means, non-volatile audit trail storage means which has a second access time for storing audit information for recreating the locked object after a systems malfunctioned data base update means for updating said locked object prior to the unlocking of said locked object by said object locking and unlocking means,

an improvement comprising non-volatile audit trail cache

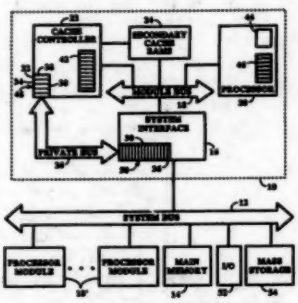
memory means coupled to said plurality of processing means, said non-volatile audit trail storage means and said data base storage means that has access times that are considerably less than said first and second access times wherein said non-volatile audit trail cache memory means functions as said data base update means and comprises before-look image storage means for receiving and storing a before-look image of a locked object of any said requesting processing means that has a lock on said locked object, after-look image receiving means for receiving and storing said after-look image of said locked object of said requesting processing means, data compaction means for comparing said before-look and said after-look images of said locked object of said requesting processing means and for providing a difference image of said locked object of said requesting processing means that is representative of the image difference between said before-look and said after-look images of said locked object of said requesting processing means, and coupling means for coupling said difference image of said locked object of said requesting processing means to said nonvolatile audit trail storage means.

5,193,163

TWO-LEVEL PROTOCOL FOR MULTI-COMPONENT BUS OWNERSHIP, AND IMPLEMENTATION IN A MULTI-PROCESSOR CACHE WRITE BACK PROTOCOL

Douglas E. Sanders, Framingham, and Michael A. Callander, Hudson, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Oct. 1, 1990, Ser. No. 591,197
Int. Cl.[5] G06F *12/00, 13/00*
U.S. Cl. 395—425 **15 Claims**



1. Apparatus comprising:
a cache memory;
a module bus coupled to said cache memory
recording means, coupled to said module bus, for recording a main memory address of entries in said cache memory;
monitoring means coupled to said module bus for monitoring transactions on a system bus that require an issuance of an invalidate request;
issuing means, coupled to said module bus including at least a main memory address;
determining means for determining if said main memory address of said invalidate request corresponds to a main memory address in said recording means; and
storing means for storing said invalidate requests, said storing means having a first portion disposed in said issuing means and a second portion disposed in said determining means.

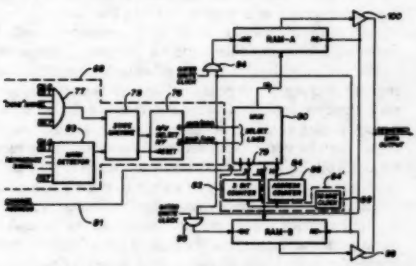
5,193,164

DATA DESKEWING APPARATUS UTILIZING BANK SWITCHED RANDOM ACCESS MEMORIES

Russell D. Shon, San Diego, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 22, 1990, Ser. No. 601,548
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—425 **6 Claims**

1. Apparatus for restoring time coherence to skewed time-sequenced data bit streams in parallel channels of a digital data processing system exhibiting random amounts of skew, said data bit streams having a format including clocks of bits preceded by a preamble, said apparatus comprising:
a. means for grouping data bits in each of said parallel channels into blocks of bits comprising sequentially occurring channel bytes of a fixed number of data bits;
b. means associated with each of said parallel channels for temporarily storing, respectively, the sequentially occurring channel bytes to provide a plurality of stored sequentially occurring channel bytes, the sequentially occurring channel bytes being stored at random times depending upon the amount of skew in said digital data processing system;
c. means for assigning a channel address segment to each of the temporarily stored channel bytes, to identify from which of said parallel channels each of the sequentially occurring channel bytes originates;
d. means for assigning a byte address segment to each of the temporarily stored channel bytes, to identify a sequentially occurring position of each of the sequentially occurring channel bytes within each of said blocks of bits;
e. means for signaling which of said means for temporarily storing channel bytes has a channel byte stored therein;
f. a first, byte oriented addressable, random access memory;

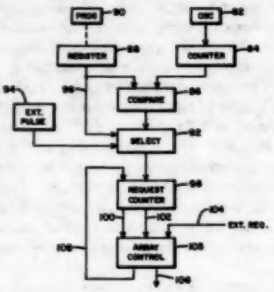


g. means, responsive to said signaling means, for writing into said first random access memory the temporarily stored channel byte at a random memory address corresponding to the channel address segment and the byte address segment of a byte written into said first random access memory;
h. a second, byte oriented addressable random access memory having stored channel bytes therein from the block of bits preceding the block of bits from which the byte just written into said first random access memory belongs;
i. means for reading out previously written channel bytes from said second random access memory to thereby provided deskewed data;
j. means for bank switching said first random access memory and said second random access memory whereby a write function of said first random access memory and a read function of said second random access memory are interchanged; and
k. means for merging the bytes read from said first and said second random access memories, to provided deskewed blocks of digital data corresponding to a multiplicity of blocks of skewed data.

5,193,165
MEMORY CARD REFRESH BUFFER

Richard G. Elkill, and Charles P. Geer, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 13, 1989, Ser. No. 450,139
Int. Cl.[5] G06F *13/00*; G11C *13/00*
U.S. Cl. 395—425 14 Claims



1. An information processing network including:

a processing device configuration including a plurality of processing devices for manipulating bit-encoded data; a memory including a plurality of memory cards having data arrays for storing bit-encoded data, with the data arrays being dynamic and requiring periodic refresh cycles; an interface connected to and shared by the processing devices and the memory cards, for transmitting bit-encoded data between the processing configuration and the memory; and a timing signal means, independent of the processing devices and the memory cards, for generating timing pulses at a constant timing frequency;

a refresh request means in each of the memory cards for receiving the timing pulses and for generating, responsive to the timing pulses, periodic refresh request pulses at a request frequency proportional to the timing frequency according to a selected value determining the number of timing pulses required to generate each refresh request pulse, each of said refresh request means including means for controllably adjusting the selected value to change the proportion of refresh request pulses to timing pulses; and

wherein each of the memory cards further includes a buffering and control means for accumulating the refresh request pulses and delaying the generation of refresh pulses while the associated memory card is receiving and responding to an external access request and further, upon accumulating refresh request pulses equal to a predetermined threshold, inhibiting the associated memory card from responding to external access requests while providing at least one refresh pulse to the data arrays of the associated memory card, without gaining access to the interface and without inhibiting or otherwise interfering with operations of any of the processing devices.

5,193,166
CACHE-MEMORY ARCHITECTURE COMPRISING A SINGLE ADDRESS TAG FOR EACH CACHE MEMORY

Victor J. Menasce, Nepean, Canada, assignor to Bell-Northern Research Ltd., Ontario, Canada

Continuation of Ser. No. 400,088, Aug. 29, 1989, abandoned.
This application Apr. 20, 1992, Ser. No. 871,578
Claims priority, application Canada, Apr. 21, 1989, 597419
Int. Cl.[5] G06F *12/02, 9/34, 13/00*; G11C *8/00*
U.S. Cl. 395—425 3 Claims

1. A cache-memory system comprising:

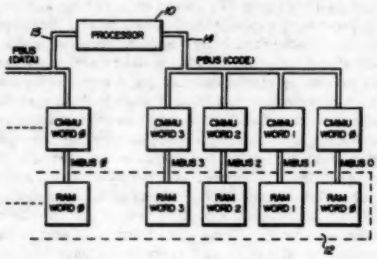
a central processing unit (CPU);

a plurality of cache-memory management units (CMMUs), each of said CMMUs having a single cache address tag for addressing one associated cache;

a processor bus for providing communication between said CPU and said CMMUs;

a plurality of main-memory storage units; and

a plurality of buses for providing communication between

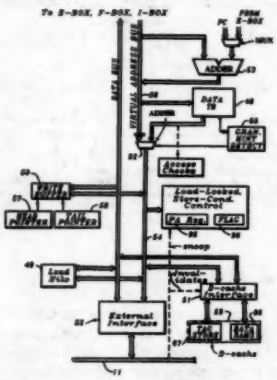


said CMMUs and said main-memory storage units, each of said memory buses being associated with only one of said CMMUs and with only one of said main-memory storage units, such that each word stored in one of said CMMUs is associated with only one word stored in one of said main-memory storage units, thereby increasing memory bandwidth while decreasing average memory latency.

5,193,167
ENSURING DATA INTEGRITY BY LOCKED-LOAD AND CONDITIONAL-STORE OPERATIONS IN A MULTIPROCESSOR SYSTEM

Richard L. Sites, Boylston, and Richard T. Witek, Littleton, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 29, 1990, Ser. No. 547,618
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—425 24 Claims



1. A method of performing an atomic byte write in an operation of a processor, said atomic byte write being performed in a memory by way of a system bus external to said processor, said system bus connecting said processor to said memory, comprising the steps of:

loading a content of a selected aligned multibyte external memory location from said memory to internal register means in said processor, said content including a non-aligned byte location to be written, and thereafter detect-

ing on said system bus any other store to said selected aligned-multibyte external memory location;

providing in said processor an indication if any other store is made to said selected aligned-multibyte external memory location;

replacing in said internal register means a value in said non-aligned byte location with a new value to be written, while leaving remainder of said content intact; and thereafter

conditionally storing by said processor said content of said internal register means to said selected aligned multibyte external memory location, depending upon whether said indication is present.

5,193,168

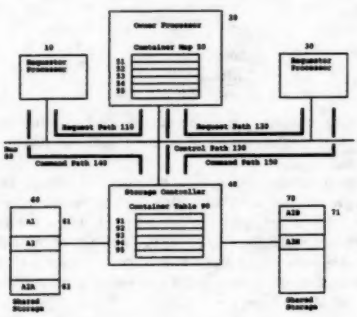
MULTIPROCESSING SYSTEM WITH ENHANCED SHARED STORAGE

Michael J. Corrigan, Rochester; Harris L. Freeman, Kasson, and George G. Gorbatenko, Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 265,114, Oct. 31, 1988, abandoned. This application Sep. 4, 1991, Ser. No. 754,339

Int. Cl.[5] G06F *12/00*

U.S. Cl. 395—425 **14 Claims**



1. A multiprocessor computer system having the ability to operate efficiently while sharing storage space in a direct access storage device, comprising:

a shared storage for storing data, comprising at least one direct access storage device, wherein said shared storage comprises a plurality of containers of data;

a communication bus for communicating between devices connected thereto;

a first storage controller connected to said shared storage and said communications bus, said storage controller further comprising a first container table, said first container table having a plurality of container table entries, wherein each said container table entry is associated with a unique container and each said entry containers a unique key for accessing said container;

an owner process connected to said communication bus, said owner processor further comprising a container map, said container map having a plurality of container map entries, wherein each said container map entry is associated with a unique container and each said entry contains a key associated with said container, wherein each said key in said container map entry associated with a respective unique container matches said unique key contained in a container table entry in said first container table associated with said respective unique container;

a first and second requestor processor connected to said communications bus, each said requestor processor comprising means for requesting a key associated with a container from said owner processor;

means in said owner processor for providing said key associated with a container from said container map in response to a request for said key from a requestor processor;

means in each said requestor processor for generating a plurality of requests for data contained in a container to said first storage controller, each said request for data contained in a container including said key associated with said container, said plurality of requests for data originating from a single request for said key associated with said container;

means in said first storage controller, responsive to a request from a requestor processor for data contained in a container, for accessing a container table entry associated with said container in said first container table;

means in said first storage controller for honoring said request if said requestor processor provides the key associated with said container, said key matching the key contained in said container table entry; and

means in said first storage controller for inhibiting said requestor processor from accessing said container of data if said requestor processor does not provide said key.

5,193,169

IMAGE DATA PROCESSING APPARATUS

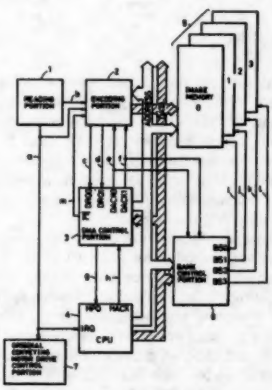
Yuji Ishikawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 25, 1989, Ser. No. 342,910

Claims priority, application Japan, Apr. 28, 1988, 63-108804

Int. Cl.[5] G06F *13/28*

U.S. Cl. 395—425 **13 Claims**



1. An image data processing apparatus, comprising:

entering means for entering image data;

storage means for storing the image data which has been entered by said entering means; and

transfer means, having a plurality of DMA channels each of which has a corresponding designation for designating a storage position in said storage means where image data is to be stored, said transfer means performing a DMA transfer of the image data entered by said entering means to said storage means using any one of the plurality of DMA channels,

wherein said transfer means comprises selection means for selecting one of the plurality of DMA channels to be used for the DMA transfer, and

wherein, whenever a predetermined number of the DMA transfers are terminated using one DMA channel according to the designation by the designation means corresponding to the one DMA channel, said selection means selects another DMA channel for the next DMA transfer which is to be performed according to the designation by

the designation means corresponding to the another DMA channel, and

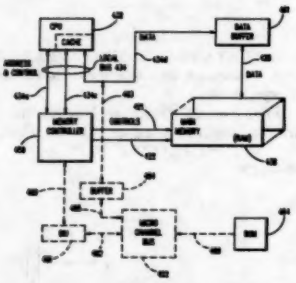
wherein while the DMA transfer is performed using one DMA channel, the storage position of the image data required for the next DMA transfer using the another DMA channel is set in the designation means corresponding to the another DMA channel.

5,193,170

METHODS AND APPARATUS FOR MAINTAINING CACHE INTEGRITY WHENEVER A CPU WRITE TO ROM OPERATION IS PERFORMED WITH ROM MAPPED TO RAM

Son H. Lam, Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 26, 1990, Ser. No. 604,837
Int. Cl.[5] G06F *12/00, 13/00*
U.S. Cl. 395—425 18 Claims



6. A method for operating a memory controller to maintain cache integrity in a computer system that includes a central processing unit (CPU), cache memory associated with said CPU, Random Access Memory (RAM), Read Only Memory (ROM), and a local bus for interconnecting said memory controller and said CPU, wherein said computer system is capable of supporting a cacheable ROM mapped to RAM mode of operation, comprising the steps of:

(a) monitoring said local bus to determine if a memory write cycle has been initiated by said CPU;

(b) determining if ROM space address is on said local bus;

(c) determining if the cacheable ROM mapped to RAM mode of operating said computer system is enabled; and

(d) providing a cache entry invalidation signal to said CPU whenever said memory controller determines that a memory write cycle has been initiated with an address on said local bus being in ROM address space while said cacheable ROM mapped to RAM mode of operating said computer system is enabled.

5,193,171

METHOD OF MANAGING SPACE OF PERIPHERAL STORAGES AND APPARATUS FOR THE SAME

Yoshiaki Shinmura, Chigasaki, and Kazuo Imai, Higashikurume, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

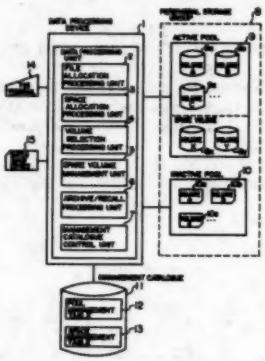
Filed Dec. 10, 1990, Ser. No. 625,046
Claims priority, application Japan, Dec. 11, 1989, 1-320933
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—425 18 Claims

1. A method of managing space in a peripheral storage in a data processing system having a data processing device connected to said peripheral storage, said peripheral storage consisting of both an active pool having a plurality of storage volumes to which files are allocated and an inactive pool having another plurality of storage volumes to which files are migrated from said active pool, comprising the steps of:

issuing a space allocation request for a file in response to a command from a user;

determining in response to the space allocation request whether or not the size of a requested space to be allocated to said file exceeds a total usable space size which amounts to a sum of a the size of free space available in the active pool and the size of free space available in the inactive pool;

checking whether or not the size of the free space available in the active pool is enough to fulfill the request for space when a negative decision results in said determining step;



selecting volumes from the active pool to allocate to the requested space when a positive decision results in said checking step; and

effecting a migration of a file in the active pool to move the migration file from the active pool to the inactive pool to produce a space in the active pool when the negative decision results in said checking step and then performing said selecting step again if the free space produced by the migration provides enough free space in the active pool to fulfill the request for space.

5,193,172

MEMORY MANAGEMENT SYSTEM FOR DISPATCHING ONLY TO A SELECTED HIGH-USE-PRIORITY TASK A MAXIMUM ALLOCATED AND GIVEN HIGHEST-USE-PRIORITY REAL-PAGES WHEN REQUESTED

Toshiaki Arai, Sagamihara; Yoshitaka Ohfusa, Yokohama; Hirobumi Nagasuka, Kawasaki, and Yasufumi Yoshizawa, Tachikawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

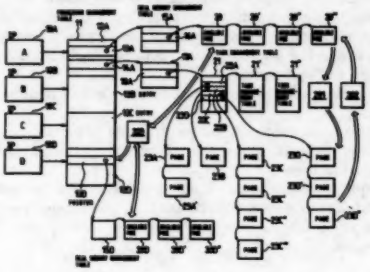
Filed Jan. 22, 1990, Ser. No. 468,355
Claims priority, application Japan, Jan. 23, 1989, 1-11932
Int. Cl.[5] G06F *12/06, 12/08*
U.S. Cl. 395—425 12 Claims

1. In an information processing system for managing a virtual memory by using a multiprocessor system having a plurality of processors sharing a real memory, a real memory management method comprising the steps of:

assigning to a first processor a highest use priority, said highest use priority being given to any real page of said real memory to be used for said first processor;

allocating said real page of highest use priority to said first processor, when a real page allocation request occurs in a processor of said plurality of processors;

measuring a number of real pages allocated to a group of pages in a task for each of said processors; and



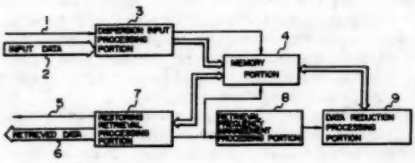
dispatching to said first processor a maximum number of real pages allocated to said group of pages in said task on a highest use priority basis when said task is dispatched.

5,193,173

METHOD AND DEVICE FOR STORING DATA SUBJECTED TO DISPERSION PROCESSING

Yoichi Seto, Hadano, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 30, 1989, Ser. No. 428,878
Claims priority, application Japan, Nov. 2, 1988, 63-278408
Int. Cl.[5] G06F *12/00*
U.S. Cl. 395—425 24 Claims



1. A data memory means for processing input data with a dispersion process and for storing said data, comprising:

(a) first memory means for storing one or a plurality of dispersion functions and inverse functions of said dispersion functions;

(b) means for reading out one of said dispersion functions;

(c) dispersion processing means for executing a first convolution operation on the input data with the one dispersion function to obtain dispersed data;

(d) second memory means for storing the dispersed data obtained as a result of said first convolution operation;

(e) means for retrieving said dispersed data stored in said second memory means;

(f) means for reading out an inverse function of said dispersion function used in forming said dispersed data thus retrieved; and

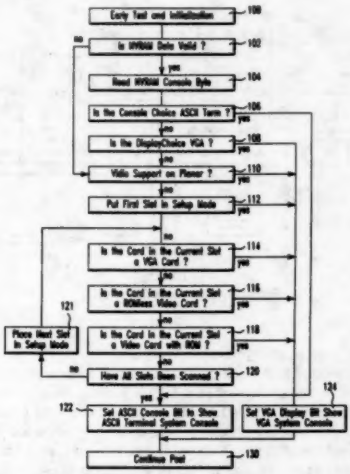
(g) restoring retrieval means for executing a second convolution operation on said dispersed at a with said inverse function thus read out and for restoring said input data from said dispersed data.

5,193,174

SYSTEM FOR AUTOMATICALLY REDIRECTING INFORMATION TO ALTERNATE SYSTEM CONSOLE IN RESPONSE TO THE COMPARISON OF PRESENT AND DEFAULT SYSTEM CONFIGURATION IN PERSONAL COMPUTER SYSTEM

Richard Bealkowski, Delray Beach; Gerald Howard, Pompano Beach; Bharat Khatri, Boca Raton; George Mathew, West Palm Beach; Matthew T. Mittelstedt, Delray Beach; Lynda M. Salvetti, Boca Raton; Richard A. Sudassasi, Boca Raton, and Carolyn J. Zemanek, Boca Raton, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 23, 1990, Ser. No. 557,035
Int. Cl.[5] G06F *7/02, 11/00*
U.S. Cl. 395—500 2 Claims


Early Test and Initialization
Is NVRAM Data Valid ?
Read NVRAM Console Byte
Is the Console Choice ASCII Term ?
Is the DisplayChoice VGA ?
Video Support on Planar ?
Put First Slot in Setup Mode
Is the Card in the Current Slot a VGA Card ?
Is the Card in the Current Slot a MDAless Video Card ?
Is the Card in the Current Slot a Video Card with ROM ?
Have All Slots Been Scanned ?
Place Next Slot in Setup Mode
Set ASCII Console Bit to Show ASCII Terminal System Console
Set VGA Display Bit Show VGA System Console
Continue Post

1. A personal computer system having a high speed system processor compatible with application programs and operating system software, said personal computer system normally configured to operate with PC keyboard and a display, said personal computer system comprising:

a high speed system processor coupled to a high speed data bus;

a first non-volatile memory electrically coupled to a slower speed data bus, said first non-volatile memory storing present system configuration data representative of a present configuration of the personal computer system;

a second non-volatile memory electrically coupled to said slower speed data bus, said second non-volatile memory storing predetermined system configuration data, said predetermined system configuration data being representative of a default system configuration having the PC keyboard and display;

a bus controller for providing communications between the high speed data bus and the slower speed data bus;

diagnostic means coupled to said slower speed data bus for comparing the present system configuration data to the predetermined system configuration data to determine whether the present system configuration corresponds to the default system configuration and generating a signal indicating the comparison result;

means coupled to said slower speed data bus for redirecting information to an alternate remote system console in response to said signal indicating that the present system configuration does not correspond to the default system configuration.

5,193,175

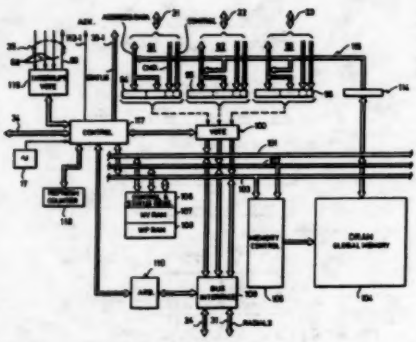
FAULT-TOLERANT COMPUTER WITH THREE INDEPENDENTLY CLOCKED PROCESSORS ASYNCHRONOUSLY EXECUTING IDENTICAL CODE THAT ARE SYNCHRONIZED UPON EACH VOTED ACCESS TO TWO MEMORY MODULES

Richard W. Cutts, Jr., Georgetown; Peter C. Norwood, Austin; Kenneth C. DeBacker, Austin; Nikhil A. Mehta, Austin; Douglas E. Jewett, Austin; John D. Allison, Austin, all of Tex., and Robert W. Horst, Champaign, Ill., assignors to Tandem Computers Incorporated, Cupertino, Calif.

Continuation of Ser. No. 282,629, Dec. 9, 1988, abandoned. This application Mar. 6, 1991, Ser. No. 666,495

Int. Cl.[5] G06F *11/16, 11/18, 11/28*

U.S. Cl. 395—575 26 Claims



16. A computer system comprising:

first, second and third CPUs executing a same given instruction stream, each of said CPUs having an address range, each of said CPUs having a separate memory access port;

first and second memory means having identical address spaces within said address range of said CPUs for storing duplicative data at identical address spaces therein, each one of said first and second memory means having first, second and third input/output ports coupled to said memory access ports of said first, second and third CPUs, respectively; and

voting means coupled to each one of said first, second and third ports to compare information appearing at the ports upon asynchronous access occurring after asynchronous execution of plural consecutive instructions by said CPUs and to allow such asynchronous accesses to be completed only in response to the same information appearing at at least two of the ports.

5,193,176

COMPUTER WORK SAVING DURING POWER INTERRUPTION

Christopher L. Brandin, Sedalia, Colo., assignor to Powercard Supply C.A., Caracas, Venezuela

Filed Oct. 17, 1990, Ser. No. 599,098

Int. Cl.[5] G06F *11/00, 11/30*

U.S. Cl. 395—575 26 Claims

1. A method of saving work in a computer during an interruption of primary power to the computer, the computer having a central processing unit (CPU) and a memory operatively coupled to the CPU, the memory including an active storage medium and a nonvolatile storage medium, the CPU being operative to produce data under control of a system program and an application program, said active and said nonvolatile storage media being suitable for storing portions of said system program and said application program and said data;

the method comprising the steps of:

loading up a power-down procedure into the computer upon booting-up of a computer operating system;

designating a backup region in said nonvolatile storage medium for receipt of data during power-down;

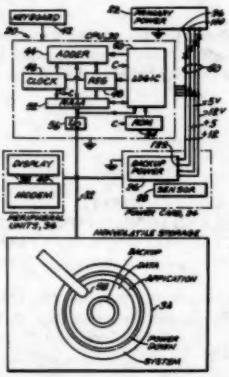
providing a computer work saving system including a backup power source, a sensor, an auxiliary memory and a controller interconnected between said auxiliary memory and said sensor;

connecting said saving system to the CPU of the computer; and

upon an occurrence of the interruption of primary power to the computer, sensed by the sensor, performing the following steps:

storing a powerdown signal indicative of interruption of primary power to the computer in said auxiliary memory;

activating the backup power source in response to said signal;



running the computer on backup power of said backup power source;

terminating a further running of said application program at a program stage in effect at the power-interruption;

transferring data, said application program, and contents of all operating memory at said program stage from said active storage medium to said backup region in said nonvolatile storage medium; and

disconnecting the backup power from the computer, and wherein, upon resumption of primary power and in response to a manually generated signal to resume operation of the computer, the method comprises further steps of:

reading the power-down signal;

returning the data and portions of the application program at said program stage from said backup region to said active storage medium; and

resuming a running of the application program from said program stage.

5,193,177

FAULT INDICATING MICROCOMPUTER INTERFACE UNITS

Michel Burri, Geneva, Switzerland, assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 435,124, Nov. 13, 1989, abandoned. This application Jul. 31, 1992, Ser. No. 921,426

Claims priority, application United Kingdom, Nov. 26, 1988, 8827663

Int. Cl.[5] G06F *11/00*

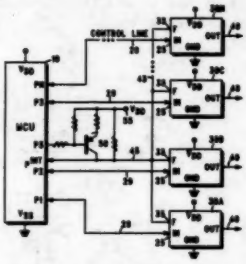
U.S. Cl. 395—575 8 Claims

1. A microcomputer interface arrangement comprising:

a microcomputer unit having a plurality of input/output (I/O) terminals and an interrupt indicating input terminal;

a plurality of interface units each comprising:

i) an input terminal coupled by a two way control line to a respective I/O terminal of the microcomputer unit;
ii) a latch having an input coupled to the input terminal and an output;
iii) an output terminal and a fault indicating terminal, the fault indicating terminals of the plurality of interface units being coupled together and to the interrupt indicating terminal of the microcomputer;
iv) output means coupled between the output of the latch and output terminals for setting a state of the output terminal in response to a data value held in the latch;



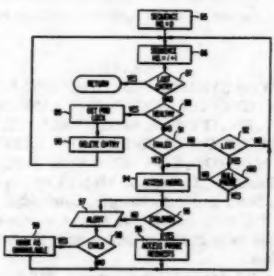
v) fault indicating means responsive to a fault condition at the output terminal for providing a fault indicating signal at the fault indicating terminal to interrupt the microcomputer unit;
vi) an inverter having an input coupled to the output of the latch and an output; and
vii) means responsive to the fault indicating signal for coupling the output of the inverter to the input terminal to invert a state thereof without affecting a state of the latch whereby the interface unit having a fault condition may be identified.

5,193,178

SELF-TESTING PROBE SYSTEM TO REVEAL SOFTWARE ERRORS

Ram Chillarege, Peekskill, and Philip L. Rosenfeld, Pleasantville, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 31, 1990, Ser. No. 606,644
Int. Cl.[5] G06F *11/00*
U.S. Cl. 395—575 **14 Claims**



1. A method of detecting failed software components in a running software system, said method being performed by a probe mechanism installed on a computer system on which said software system is running, said method comprising the steps of:

requesting by said probe mechanism service, a certain level of service, or a change in the level of service from a target selected from a set of functions, modules and/or subsystems of said software system while said software is running on said computer system; and

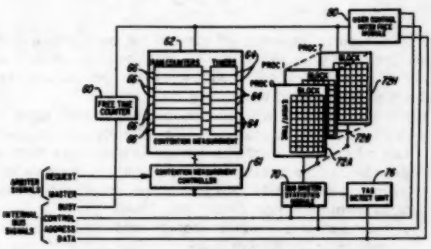
check by said probe mechanism for a response to the request from said running software system within a predetermined period of time to determine if said target is healthy or failed.

5,193,179

ACTIVITY MONITOR SYSTEM NON-OBTRUSIVE STATISTICAL MONITORING OF OPERATIONS ON A SHARED BUS OF A MULTIPROCESSOR SYSTEM

Maria Laprade, Palm Bay, Fla., and Thomas L. Sterling, Crofton, Md., assignors to Harris Corporation, Melbourne, Fla.

Continuation of Ser. No. 243,526, Aug. 9, 1988, abandoned. This application Mar. 5, 1991, Ser. No. 664,508
Int. Cl.[5] G06F *11/34*
U.S. Cl. 395—575 **7 Claims**



1. An activity monitor for monitoring activity in a multiprocessor system having a plurality of processor interconnected via an internal bus and a plurality of memory blocks with which the processors communicate for storing and retrieving data during read, write, and test-and-set operations, wherein at any time only one processor can operate on the internal bus, said activity monitor comprising:

a plurality of memory units wherein each one of said plurality of memory units includes a plurality of storage locations;

first means for determining the processor that is operating on the internal bus;

second means for determining the current function being performed by the processor operating on the internal bus;

third means for determining the current memory block being utilized by the current processor in performing the current function;

wherein each one of said plurality of memory units is associated with one of the plurality of processors, and wherein within each one of said plurality of memory units a group of said plurality of storage locations is associated with one memory block, and further wherein each storage location within said group is associated with one of the functions, such that each processor is associated with a memory unit and each storage location within each memory unit is associated with a function and memory block pair;

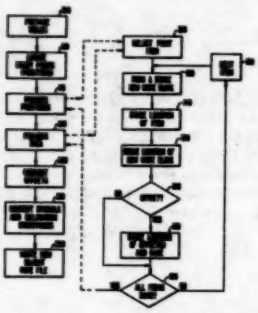
means responsive to said first, said second and said third means for storing information relative to the current processor, the current memory block, and the current function in said unique storage location associated with the current function, the current memory block and the current processor.

5,193,180

SYSTEM FOR MODIFYING RELOCATABLE OBJECT CODE FILES TO MONITOR ACCESSES TO DYNAMICALLY ALLOCATED MEMORY

Reed Hastings, La Honda, Calif., assignor to Pure Software Inc., Sunnyvale, Calif.

Filed Jun. 21, 1991, Ser. No. 718,573
Int. Cl.[5] G06F *11/34*
U.S. Cl. 395—575 11 Claims



7. A computer implemented method for equipping a computer program with the ability to monitor most of its own memory accesses, wherein memory access types include read and write, said method comprising the steps of:

performing the following computer implemented steps for substantially all relocatable object files for said program, said relocatable object files containing instruction items of preexisting object code, wherein instruction items include instructions and data, said instruction items having locations within said preexisting object code:

a) providing in a computer storage medium a new object code table for storing instruction items;

b) storing into said new object code table, for each preexisting instruction item in said preexisting object code, a new code block including said preexisting instruction item, said storing step comprising

i) adding memory read monitoring code to said new code block, for preexisting read instruction items, for which performance involves a memory access of a read type; and

ii) adding memory write monitoring code to said new code block, for preexisting write instruction items, for which performance involves a memory access of a write type;

c) updating offsets in said new object code table;

d) creating in a computer storage medium a new relocatable object film comprising instruction items from said new object code file.

5,193,181

RECOVERY METHOD AND APPARATUS FOR A PIPELINED PROCESSING UNIT OF A MULTIPROCESSOR SYSTEM

George J. Barlow, Tewksbury, Mass.; James W. Keeley, Nashua, N.H.; Richard A. Lemay, Carlisle, Mass.; Jian-Kuo Shen, Belmont, Mass.; Robert V. Ledoux, deceased, late of Litchfield, N.H. by Frances A. Ledoux, executrix; Thomas F. Joyce, Westford, Mass.; Richard P. Kelly, Nashua, N.H.; Robert C. Miller, Braintree, Mass., assignors to Bull HN Information Systems Inc., Billerica, Mass.

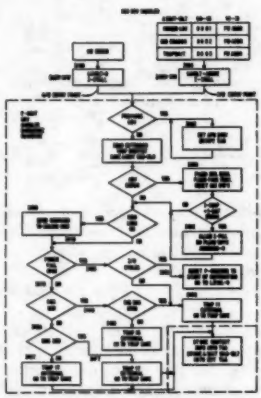
Filed Oct. 5, 1990, Ser. No. 593,458
Int. Cl.[5] G06F *11/00*
U.S. Cl. 395—575 18 Claims

1. A method for determining whether or not any one of a plurality of pipelined processing units which connect to a common system bus of a multiprocessor system running under a single operating system and each of which include a plurality of pipeline stages, is sufficiently trustworthy to recover from an error situation signaled through a trap operation, each pipelined processing units being constructed from a plurality of boards each of which define an optimum replaceable unit (ORU), said method comprising the steps of:

(a) including within each different ORU, an unusual event detector (UV) for determining when any of the stages contained on said ORU is not behaving properly;

(b) storing an indication of an unusual event having been detected by said UEV detector;

(c) collecting indications of said unusual events from each of said ORU's by one of said ORU's which provides an interface to said system bus;



(d) said one of said ORU's in response to a signal indicating the occurrence of an unusual event inhibiting any further transfer of requests by said processing unit to said system bus;

(e) broadcasting a signal to each of the remaining ORU's for causing the stages of said pipelined processing unit to emulate completion of all outstanding instructions contained within said plurality of pipeline stages for flushing said pipelined stages; and,

(f) upon such completion, transferring control to one of the ORUs containing a firmware handler routine for further processing of said unusual event to enable signalling said operating system for determining if reliable recovery from said fault by one of said processing units is possible.

5,193,182

COMPUTER SYSTEM FOR DEFINING LOGICAL OPERATIONS ON DESIGN DATA INCLUDING RETRIEVE ENTITY-SET, SEND, RECEIVE, SIGNAL, WHEN, REFERENCE TO ENTITY-SET, REFERENCE TO ENTITY METHOD, CONNECT AND DISCONNECT

Charles W. Bachman, Lexington, Mass.; Christopher P. Gane, New York, N.Y.; David A. Krieger, Cambridge, Mass.; John T. Micco, Waltham, Mass., and Igor Abramovich, Medford, Mass., assignors to Bachman Information Systems, Inc., Burlington, Mass.

Filed Apr. 27, 1990, Ser. No. 516,247
Int. Cl.[5] G06F *15/06*
U.S. Cl. 395—600 14 Claims

1. A computer system for processing information representative of business transactions comprising:

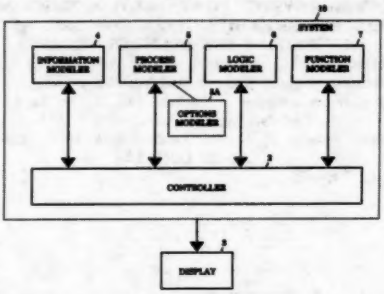
A. two or more modeler subsystems, each said subsystem including modeler means for creating, analyzing, and modifying two or more models corresponding to each of said modeler subsystems, each of said models having design data;

B. at least one of said modeler subsystems being a logic modeler subsystem (LMS), including Process Description Language (PDL) means for defining logical operations on at least one of said design data, said logical operations being defined by PDL design data;

C. operator means coupled to each said modeler subsystem for applying external signals to each of said modeler subsystems, said signals evoking a response from the group consisting of: creating, analyzing, and modifying, said response being evoked from at least one of said modeler means; and

D. wherein said PDL design data corresponds to at least one from the group consisting of Retrieve Entity-set, Send, Receive, Signal, When, Reference to an Entity Method, Reference to an Entity-set, Connect, and Disconnect, wherein:

i. Retrieve Entity-set defines retrieval of an entity set from an information store,



ii. Send defines the destination of information leaving a particular process,

iii. Receive defines the source of information entering a particular process,

iv. Signal identifies an exception condition or error and transfers control to a condition handler,

v. When defines an action to be taken when a specific condition occurs,

vi. Reference to an Entity-set defines a set of values which are references to entity instances,

vii. Reference to an Entity Method defines a procedure associated with a specific entity type,

viii. Connect defines the joinder of two instances of entities at a partnership set of each of said entities by a single partnership, and

iv. Disconnect defines the destruction of a partnership.

5,193,183

SYSTEM FOR ACCESSING DESIGN DATA OF MODELER SUBSYSTEMS BY REFERENCE TO PARTNERSHIP SET AND FOR DYNAMICALLY CORRELATING DESIGN DATA OF MODELER SUBSYSTEMS

Charles W. Bachman, Lexington, Mass., assignor to Bachman Information Systems, Inc., Burlington, Mass.

Filed Apr. 27, 1990, Ser. No. 516,248
Int. Cl.[5] G06F *15/40, 12/00*
U.S. Cl. 395—600 **7 Claims**

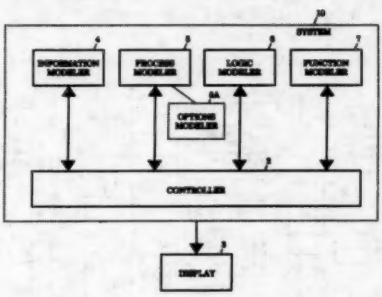
1. A computer system for information management systems of organizations, comprising:

A. one or more modeler subsystems including modeler means for creating, analyzing, and modifying one or more models corresponding to each of said modeler subsystems, each of said models having design data associated therewith;

B. partnership set subsystem coupled to one or more of said modeler subsystems, said partnership set subsystem including means for establishing in said computer system one or more partnership sets within at least one of said design data, each of said partnership sets being representative of zero, one or more partnership;

C. partnership subsystem coupled to said partnership set subsystem, said partnership subsystem including means for establishing one or more of said partnerships, wherein each of said partnerships is characterized by one partnership set associated with itself or associated with one other partnership set;

D. access subsystem coupled to said modeler subsystems, said partnership subsystem and said partnership set subsystem, said access subsystem including means for accessing in said computer system one or more of said design data by



reference to a partnership set which is in partnership with partnership sets of said one or more of said design data;

E. operator means coupled to said modeler subsystems for applying external signals to each of said modeler subsystems, said signals being effective to evoke a creating, analyzing, or modifying response from at least one of said modeler means; and

F. modeler linking means coupled to said modeler subsystems for dynamically correlating said design data, whereby a change to any of said design data of one of said modeler subsystems affects a substantially immediate corresponding change to said design data of others of said modeler subsystems.

5,193,184

DELETED DATA FILE SPACE RELEASE SYSTEM FOR A DYNAMICALLY MAPPED VIRTUAL DATA STORAGE SUBSYSTEM

Jay S. Belsan, Nederland; George A. Rudeseal, Boulder; Charles A. Milligan, Golden; Mogens H. Pedersen, Longmont, all of Colo.; John F. Kitchen, Lindfield, Australia, and Henry S. Ludlam, Longmont, Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Jun. 18, 1990, Ser. No. 540,500
Int. Cl.[5] G06F *11/00*
U.S. Cl. 395—600 **19 Claims**

1. A dynamically mapped virtual memory data storage subsystem, that includes a plurality of data storage devices and that is connected to at least one host processor for storing data files for access by said host processor using a virtual address assigned by said host processor to each said data file and that deletes data files from said data storage devices independent of said host processor, wherein said host processor transmits predefined commands, each of which includes a set of parameters, to said data storage subsystem to activate said data storage subsystem to read and write data files on said data storage devices, comprising:

means, responsive to said host processor transmitting a data file to said data storage subsystem for storage therein, for mapping a virtual address assigned by said host processor to said transmitted data file into an address which defines

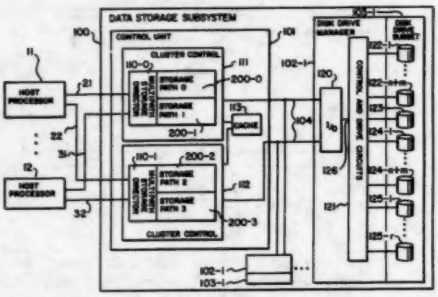
a physical memory location on one of said data storage devices;

means for writing said transmitted data file to said defined physical memory location on said data storage device;

means for storing data, including said address, indicative of said virtual address to physical memory location mapping for each of said data files stored on said data storage devices;

means, in said host processor, responsive to said host processor generating controls signals to scratch one of said data files, for transmitting commands to said data storage subsystem, independent of said host processor, identifying said scratched data file, comprising:

means for generating one of said predefined commands, independent of said host processor;



means for altering at least one of said set of predefined parameters in said one generated predefined command to indicate to said data storage subsystem that said one command containing said altered parameters originates from said transmitting means rather than said host processor;

means for forwarding said altered command to said data storage system; and

means, responsive to said scratched data file identifying commands, for expunging said data indicative of said virtual address to said physical memory location mapping from said storing means for said identified scratched data file.

5,193,185

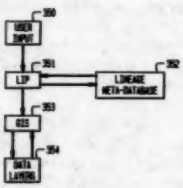
METHOD AND MEANS FOR LINEAGE TRACING OF A SPATIAL INFORMATION PROCESSING AND DATABASE SYSTEM

David Lanter, 140 Westport Dr., Columbia, S.C. 29223

Filed May 15, 1989, Ser. No. 351,877

Int. Cl.[5] G06F *15/40*

U.S. Cl. 395—600 **22 Claims**



14. An apparatus for tracing lineage of at least one spatial data layer of a spatial information processing and database system, wherein said apparatus allows a user to create, and to provide queries to, a meta-database of information concerning said system, the apparatus comprising:

stored software modules capable of establishing and querying a meta-database,

means for accepting commands,

means for recognizing valid user commands

means for creating a semantic network depicting the relationship among data layers in said system,

means for integrating multiple spatial data applications,

means for allowing a user to make queries to said meta-database concerning the lineage relationships stored in the meta-database semantic network, and

means for providing answers to a user to enable a user to determine the lineage relationships stored in the meta-database semantic network from the answer to such queries.

5,193,186

PROCESSOR SYSTEM FOR EXECUTING PROCESSES IN PARALLEL UNDER MULTITASK, CONTROL METHOD OF WAITING FOR EVENT OF PROCESS

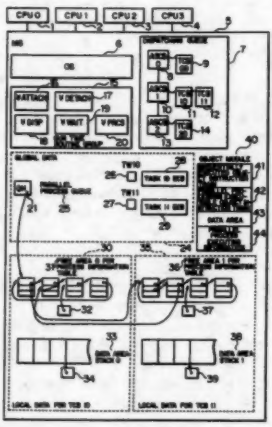
Yoshiko Tamaki, Kunitachi; Katsuyoshi Kitai, Hadano; Yasuhiro Inagami, Kodaira, and Yoshikazu Tanaka, Omiya, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 30, 1991, Ser. No. 647,754

Claims priority, application Japan, Feb. 5, 1990, 2-026449

Int. Cl.[5] G06F *9/06*

U.S. Cl. 395—650 **37 Claims**



1. In a processor system for executing a plurality of tasks, which respectively control execution of one or more of a plurality of processes, a method of restarting execution of a first process which is under control of a particular one of said tasks after said first process is stopped to wait for occurrence of an event associated with at least one second process different from said first process, comprising steps executed by the particular task, the steps including:

(a) detecting whether or note said event associated with said second process has occurred;

(b) restarting execution of said first process when it is detected that said event has occurred;

(c) determining whether or not there is an execution waiting process when said event has not yet occurred;

(d) executing an executing waiting process when there is an execution waiting process; and

(e) repeating said steps (a) to (d) after completion of the execution of said execution waiting process when there is an execution waiting process or after said step (c) when there is no execution waiting process.

5,193,187

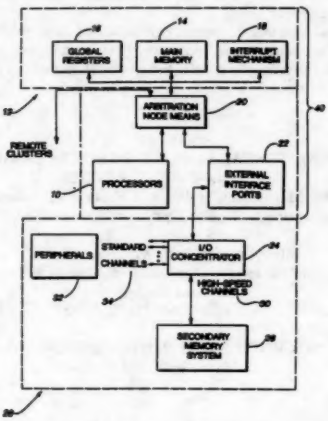
FAST INTERRUPT MECHANISM FOR INTERRUPTING PROCESSORS IN PARALLEL IN A MULTIPROCESSOR SYSTEM WHEREIN PROCESSORS ARE ASSIGNED PROCESS ID NUMBERS

Robert E. Strout, II, Livermore, Calif.; George A. Spix, Eau Claire, Wis.; Edward C. Miller, Eau Claire, Wis.; Anthony R. Schooler, Eau Claire, Wis.; Alexander A. Silbey, Eau Claire; Andrew E. Phelps, Eau Claire, Wis.; Brian D. Vanderwarn, Eau Claire, Wis., and Gregory G. Gaertner, Eau Claire, Wis., assignors to Supercomputer Systems Limited Partnership, Eau Claire, Wis.

Continuation of Ser. No. 536,199, Jun. 11, 1990, abandoned, which is a continuation-in-part of Ser. No. 459,083, Dec. 29, 1989. This application Jun. 10, 1992, Ser. No. 898,387

Int. Cl.[5] G06F *9/46*

U.S. Cl. 395—650 19 Claims



1. A fast interrupt mechanism for a multiprocessor system comprising:

a plurality of processors in the multiprocessor system wherein each processor is assigned a process number and a common process number defines a selected set of processors representing all of the processors which are working in parallel on a single process; and

a fast interrupt means uniquely connected to each processor for receiving interrupts and exceptions from one or more of the processors and for simultaneously interrupting all of the processors associated with the selected set of processors working in parallel on a single process within a bounded number of clock cycles in response to receiving the interrupt or exception, the fast interrupt means including:

a plurality of register means, one for each of the processors in the multiprocessor system, for storing the process number assigned to that processor;

a plurality of event means, one for each of the processors in the multiprocessor system, for indicating that an event request representing an exception or an interrupt was generated by that processor; and

comparison means operably connected to the register means and the event means for comparing the process number in the register means for a processor having a valid interrupt or exception as indicated in the event means with the process number in each of the register means and for generating an interrupt to be sent to each processor that matches the comparison, such that all processors working on the same process in parallel have the same process number and are interrupted in parallel.

5,193,188

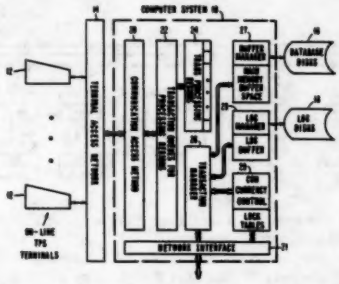
CENTRALIZED AND DISTRIBUTED WAIT DEPTH LIMITED CONCURRENCY CONTROL METHODS AND APPARATUS

Peter A. Franaszek, Katonah; John T. Robinson, Yorktown Heights, and Alexander Thomasian, Pleasantville, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 294,334, Jan. 5, 1989, abandoned. This application Feb. 25, 1991, Ser. No. 660,762

Int. Cl.[5] G06F *15/40*

U.S. Cl. 395—650 22 Claims



1. In a multi-user data processing system having a transaction manager including lock tables for managing accesses to a database by a plurality of concurrently running transactions, a waiting depth limited concurrency control method performed by said transaction manager and comprising the steps of:

maintaining a wait depth data structure which graphically describes a waiting depth of transactions being processed by said system where, for each transaction in the system at any instant of time, a real-valued function provides a measure of a current length of a transaction, wherein said data processing system is a centralized system and locks granted by said transaction manager are shared or exclusive, said data structure being a directed graph describing a hierarchy of transactions waiting on other transactions for release of exclusive locks on portions of said database, and said real-valued function is a number of locks held by a transaction;

for each request for a lock by a transaction, testing the wait depth data structure to determine if said waiting depth exceeds a predetermined value;

using said real-valued function to determine which subset of transactions is to be restarted in case of a conflict between transactions which results in said waiting depth exceeding said predetermined value; and

restarting said subset of transactions so that the wait depth is reduced or kept to no more than said predetermined value.

5,193,189

PROGRAMMABLE CONTROLLER WITH MULTIPLE PRIORITY LEVEL TASK PROCESSING

Mark A. Flood; Michael D. Kalan, both of Mayfield Heights; Peter N. Preis, Lyndhurst, all of Ohio, and Alden L. Peterson, II, Brooklyn, N.Y., assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.

Continuation of Ser. No. 404,307, Sep. 7, 1989, abandoned, which is a continuation-in-part of Ser. No. 105,815, Oct. 7, 1987, Pat. No. 4,937,777. This application Dec. 9, 1991, Ser. No. 809,085

Int. Cl.[5] G06F *15/46*; G05B *19/00*

U.S. Cl. 395—650 7 Claims

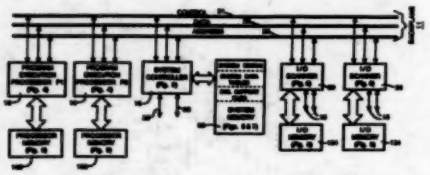
1. A programmable controller, for operating a machine to perform programmed functions, which comprises:

a first means for storing a plurality of user defined programs, including a machine control program;

a processing means, coupled to said first means for storing, for executing the user defined programs;

a second means for storing a first data table containing pointers to different types of programs in a priority order in which the different types are to be executed by said processing means, two types of programs being the machine control program and the other user defined programs, said processing means being coupled to said second means for storing for the placement of pointers therein to designate programs for execution;

designating means for a user to define an amount of program execution time of said processing means to be devoted to



the execution of other user defined programs than the machine control program;

means, coupled to said second means for storing, for controlling amounts of time that the machine control program and other user defined programs are executed by said processing means on a time-slice basis by reversing the relative priority order of the machine control program and the other user to defined programs in the first data table in response to the amount of program execution time defined by said designating means to which is connected to said means for controlling; and

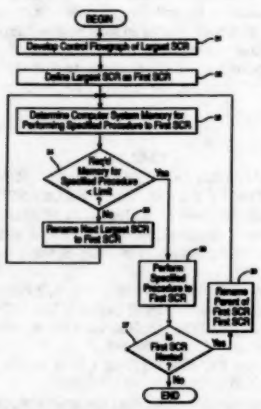
means for coupling input and output devices on the machine to the processor means.

5,193,190

PARTITIONING OPTIMIZATIONS IN AN OPTIMIZING COMPILER

Joyce M. Janczyn, Toronto, Canada, and Peter W. Markstein, Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 26, 1989, Ser. No. 371,487
Int. Cl.[5] G06F *9/45*
U.S. Cl. 395—700 **7 Claims**



1. A method for operating a compiler program in a computer system, said computer system utilizing said compiler program to execute a specified procedure for improving an intermediate language version of a computer program under development, comprising the steps of:

a) developing a control flowgraph representing a largest strongly connected region in said program under development;

b) by examining code sequences in said strongly connected region, determining an amount of memory of said computer system required to perform said specified procedure to said strongly connected region;

c) comparing said amount of memory determined in step b) to a predetermined computer system memory usage limit to determine if said amount of memory determined in step b) exceeds said predetermined computer system memory usage limit, thereby denoting an incapability of said computer system of applying said specified procedure to said strongly connected region;

d) if said amount of memory determined in step b) does not exceed said predetermined limit, applying said specified procedure to said strongly connected region examined in step b); otherwise

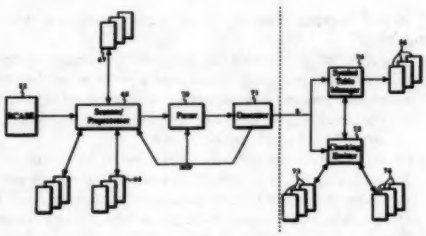
e) if said amount of memory determined in step b) exceeds said predetermined limit, executing steps b)–d) to a next largest previously unselected strongly connected region in said control flowgraph.

5,193,191

INCREMENTAL LINKING IN SOURCE-CODE DEVELOPMENT SYSTEM

William M. McKeeman, Hollis, and Shota Aki, Weare, both of N.H., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 30, 1989, Ser. No. 375,398
The portion of the term of this patent subsequent to Dec. 8, 2009, has been disclaimed.
Int. Cl.[5] G06F *15/00, 9/30*
U.S. Cl. 395—700 **20 Claims**
MICROFICHE APPENDIX INCLUDED
(5 Microfiche, 202 Pages)



1. In a method of executing on a computer an edit-compile-link cycle in developing source code, said cycle including generating a plurality of modules of source text accessed by said computer, compiling said modules by said computer to generate a code table for each module, and linking said code tables by said computer to produce a link table and a link list and thereby create an executable object-code image, the improvement comprising the steps of:

a) editing one of said modules of said source text and storing edited source text in one of said source-text buffers in memory of said computer, said one of said modules including a plurality of lines of source text;

b) recompiling by said computer said one of said source-text buffers to update said code table for said one of said modules in said memory, by generating object code for said code table only for lines of source text which are changed in said step of editing;

c) relinking said one of said code tables by said computer to update said code image in a buffer in said memory;

said step of relinking including:

i) updating said link table in memory, where said link table includes a plurality of entries, where each said entry is an identification and location of an element needed by a statement in said code table or is an identification and location of an element supplied by a statement in said code table;

ii) updating only parts of said link list related to said elements supplied or elements needed which have been changed in said step of editing, said link list having been generated by matching said entries identifying elements needed with entries identifying elements supplied in said link table to produce matched entries in said link list; said link list including a matched entry for each one of said elements needed matched with an element supplied, and each said matched entry having an indicator of whether each said element supplied or element needed was changed in said step of editing; said step of updating said link list employing said indicators to determine whether a new matched entry is generated or alternatively a matched entry already in said link table is reused.

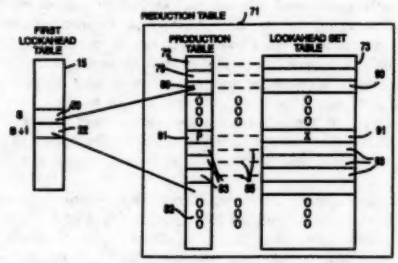
5,193,192
VECTORIZED LR PARSING OF COMPUTER PROGRAMS

David A. Seberger, Livermore, Calif., assignor to Supercomputer Systems Limited Partnership, Eau Claire, Wis.

Continuation-in-part of Ser. No. 537,466, Jun. 11, 1990, which is a continuation-in-part of Ser. No. 459,053, Dec. 29, 1989. This application Aug. 23, 1990, Ser. No. 571,502

Int. Cl.[5] G06F *9/45*

U.S. Cl. 395—700 **11 Claims**



1. In a machine-effected method of operating a parser portion of a compiler for parsing a computer program in an input stream, said computer program being written in a predetermined programming language having a given grammar, including the machine-executed steps of:

automatically generating a parser state table means having a plurality of state indicating entries, one entry means for indicating each possible state of the parser, each of said state indicating entries including a declaration of said predetermined programming language in said given grammar;

automatically generating a linearized vector table means having an input table including a given plurality of input entries respectively related to the parser state table means entries such that one or more of the input entries relate to a one of the state indicating entries, respectively, and an output table having a predetermined plurality of output entries, arranged said output entries to be identically addressable within the output table as the input entries are respectively addressed within the input table, said predetermined plurality of being equal to said given plurality; and

parsing the computer program in the input stream using the established parser state table means and said linearized table means.

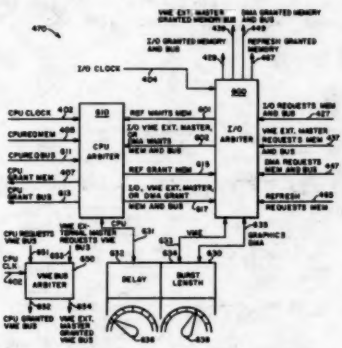
5,193,193
BUS CONTROL SYSTEM FOR ARBITRATING REQUESTS WITH PREDETERMINED ON/OFF TIME LIMITATIONS

Sanjay Iyer, Stanford, Calif., assignor to Silicon Graphics, Inc., Mountain View, Calif.

Continuation of Ser. No. 716,779, Jun. 18, 1991, abandoned, which is a division of Ser. No. 244,755, Sep. 14, 1988, abandoned. This application Feb. 24, 1992, Ser. No. 841,908

Int. Cl.[5] G06F *13/36, 13/372*

U.S. Cl. 395—725 **10 Claims**



1. A method of controlling the use of a computer bus, comprising the steps of:

receiving a plurality of requests to use the bus from a plurality of sources, including a first source, a second source, and a third source;

preselecting a length of a first period for use of the bus and a length of a second period for use of the bus such that a combined length of the first and second periods is less than a maximum length of time that the third source can tolerate being off the bus, wherein the first source can request a first period use of the bus that would last for up to the length of the first period, the second source can request a second period use of the bus that would last up to the length of the second period in the presence of requests by the first source and the third source, and the third source can request a use of the bus that would last as long as it would take for the third source to complete a third source operation; and

granting each of the plurality of requests such that:

the plurality of sources do not use the bus more than one at a time;

first periods occur repetitively if the first source requests more than one first period use of the bus;

second periods occur repetitively whether or not the second source requests a second period use of the bus;

periods available for the third source to use the bus occur repetitively if the third source requests more than one use of the bus;

if requests from the first, second, and third sources are received at the same time, then the third period use of the bus is granted first in time, the first period use of the bus is granted second in time, and the second period use of the bus is granted third in time;

following a first period use of the bus and after any pending third source request has been granted and the third source operation has been completed, the second source is granted use of the bus for the second period, whether or not the second source requests a second period use of the use;

no other source is granted use of the bus while the first source is using the bus during the first period;

no other source is granted use of the bus while the second source is using the bus during the second period; and no other source is granted use of the bus while the third source is using the bus.

5,193,194

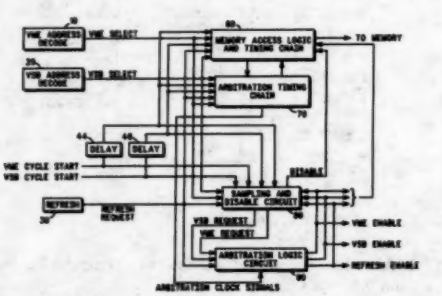
CONCURRENT ARBITRATION SYSTEM AND METHOD FOR BUS CONTROL

Eugene H. Gruender, Jr., and Douglas R. Kraft, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 566,791, Aug. 13, 1990, abandoned, which is a continuation of Ser. No. 259,559, Oct. 18, 1988, abandoned. This application Aug. 1, 1991, Ser. No. 742,154

Int. Cl.[5] G06F *13/362*

U.S. Cl. 395—725 **10 Claims**



1. A computer resource arbitration system for controlling access to a resource by a plurality of requesters, at least two of which are capable of generating corresponding cycle start signals and resource request signals, and for granting access to said resource by a first requester generating a first cycle start signal even though said first requester had been granted the immediately preceding access to said resource and a second requester generated a second resource request signal before said first requester generated said first cycle start signal, comprising:

arbitration logic means, responsive to the receipt of said first and second resource request signals for generating a requester enable signal on behalf of a requester granted highest priority according to a predetermined priority, said arbitration logic means requiring an arbitration cycle of at least a first predetermined time interval to generate said requester enable signal;

additional logic means for determining whether said first requester generated said first cycle start signal before said second requester generated said second resource request signal and for determining whether a requester enable signal generated during an immediately preceding arbitration cycle is coincidentally being asserted on behalf of said first requester and, if both of said determinations are true, generating a resource access signal on behalf of said first requester, said resource access signal being generated prior to the expiration of said first predetermined time interval; and

memory access means for immediately granting access to said first requester if said resource access signal is generated by said additional logic means and for granting access to said resource by said requester having highest priority based on said corresponding resource access signal after a previous memory access cycle is complete, said access to said resource by said first requester in response to said resource access signal occuring simultaneously with said arbitration logic means determining which requester has highest priority.

5,193,195

MICROCOMPUTER HAVING EASILY TESTABLE INTERRUPT CONTROLLER

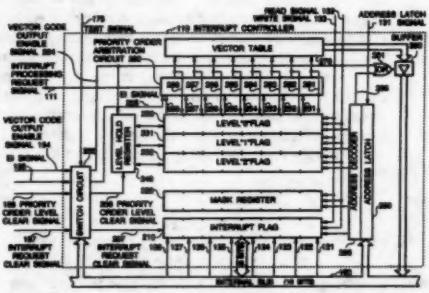
Takashi Miyazaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 21, 1990, Ser. No. 586,789

Claims priority, application Japan, Sep. 22, 1989, 1-246704

Int. Cl.[5] G06F *9/00*

U.S. Cl. 395—725 **10 Claims**



1. A microcomputer comprising:

a plurality external terminals, one of said external terminals being connected to receive a test mode signal;

an internal bus;

a central processing unit coupled to said internal bus;

an input/output interface connected to said external terminals and to said internal bus, said input/output interface controlling data transfer between the microcomputer and an external device connected to one of said external terminals under control of said central processing unit;

an interrupt request source connected to said internal bus;

an interrupt controller coupled to said internal bus, said interrupt controller receiving an interrupt request signal from said interrupt request source and generating an interrupt processing request signal to said central processing unit; and

a switch circuit connected to receive a vector code output enable signal and an interrupt enable signal from said central processing unit and first and second signals from said internal bus, said switch circuit being controlled by said test mode signal supplied through one of said external terminals to output said vector code output enable signal and said interrupt enable signal to said interrupt controller when said test mode signal is inactive and to output said first and second signals from said internal bus as the vector code output enable signal and the interrupt enable signal to said interrupt controller when said test mode signal is active.

5,193,196

PROCESS REQUEST ARBITRATION SYSTEM WHICH PREFERENTIALLY MAINTAINS PREVIOUSLY SELECTED PROCESS REQUEST UPON RECEIPT OF A SUBSEQUENT REQUEST OF IDENTICAL PRIORITY

Tetsuya Mochida; Shigeo Tsujioka, both of Yokohama; Masami Jikihara, Yamato; Hitoshi Sadamitsu, Ashigarakami, and Kazushi Kobayashi, Ebina, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 31, 1989, Ser. No. 331,297

Claims priority, application Japan, Apr. 4, 1988, 63-82617

Int. Cl.[5] G06F *13/36*

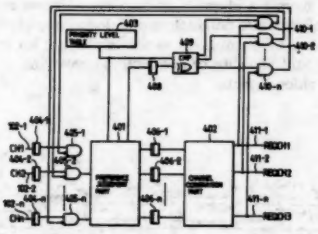
U.S. Cl. 395—725 **8 Claims**

3. An apparatus for controlling selection of process requests delivered from a plurality of devices having predetermined priority levels, comprising:

preference means responsive to receipt of said process requests for selecting a process request of highest priority level and outputting information, including a device identifying signal and a priority level identifying signal, identifying the device which delivered the selected process request;

storage means for storing the information outputted by said preference means and for outputting at least a signal indicating a selected device;

comparison means responsive to said preference means for



indicating when the information outputted by said preference means changes; and

means responsive to said comparison means for controlling said storage means to change the signal outputted from said storage means to indicate a device having a priority level identified by the changed information outputted from said preference means when the priority level signal in said information has changed, and for controlling said storage means to maintain the signal outputted from said storage means when the priority level signal in said information has not changed.

5,193,197

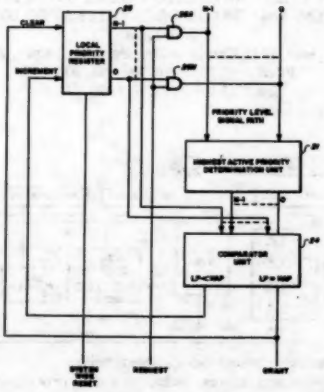
APPARATUS AND METHOD FOR DISTRIBUTED DYNAMIC PRIORITY ARBITRATION FOR ACCESS TO A SHARED RESOURCE

Charles P. Thacker, Palo Alto, Calif., assignor to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 100,533, Sep. 24, 1987, abandoned. This application Aug. 30, 1990, Ser. No. 576,177

Int. Cl.[5] G06F *13/14*

U.S. Cl. 395—725 **43 Claims**



1. A data processing system comprising:

a plurality of processing units;

at least one shared resource;

a plurality of arbitration means, each arbitration means associated with a processing unit and exchanging signals therewith, said arbitration means for determining a priority of said associated processing unit;

a priority signal but having a signal path for each level of priority available to said processing units, all signal paths being coupled to all arbitration means, wherein each arbitration means applies a priority signal to a signal path related to a level of priority of said associated processing unit when a first signal is applied to an arbitration means by said associated processing unit, each arbitration means including comparator means coupled to said priority signal bus for applying a second signal to said associated processing unit when said arbitration means priority signal identifies a highest priority of all priority signals applied to said priority signal bus as corresponding to an indicia of priority of said processing unit; and,

up-date means for incrementing said indicia of a priority of said processing unit, said indicia increased upon access by any of said plurality of processing units to said shared resource, and a last processing unit having access to said at least one shared resource having an associated indicia of priority set to a lowest priority.

5,193,198

METHOD AND APPARATUS FOR REDUCED POWER INTEGRATED CIRCUIT OPERATION

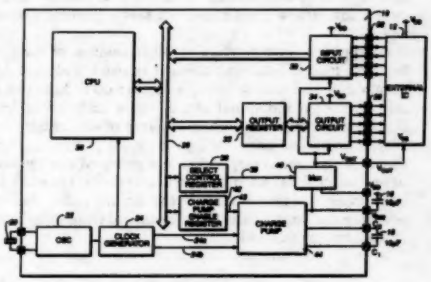
Hideaki Yokouchi, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed May 6, 1991, Ser. No. 696,460

Claims priority, application Japan, May 7, 1990, 2-117176; Aug. 10, 1990, 2-213221; Mar. 15, 1991, 3-51381

Int. Cl.[5] H03K *3/01*; H02M *3/07*

U.S. Cl. 395—750 **18 Claims**



1. An integrated circuit comprising:

a) a charge pump circuit, connected to a first power supply voltage node, for producing a boosted power supply voltage as an output; and

b) a power supply multiplexer circuit, having said charge pump output and said first power supply voltage node connected as inputs, for selecting between said charge pump output and said first power supply voltage node to thereby output a selected one of said inputs;

c) a power supply terminal for supplying said power supply multiplexer output to other integrated circuits provided externally; and

d) at least one input circuit having power supply terminals wherein said multiplexer output voltage is connected to supply power to said input circuit.

5,193,199

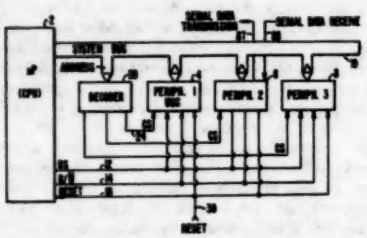
DEVICE AND METHOD FOR PROGRAMMING CRITICAL HARDWARE PARAMETERS

Monte J. Dalrymple, Fremont; Don Smith, Los Gatos, and Lois F. Brubaker, Newark, all of Calif., assignors to Zilog, Inc., Campbell, Calif.

Continuation of Ser. No. 181,742, Apr. 14, 1988, abandoned. This application Aug. 1, 1991, Ser. No. 742,152

Int. Cl.[5] G06F *9/22, 13/10*

U.S. Cl. 395—775 **4 Claims**



1. In a computer system having a microprocessor chip and a plurality of additional individual circuit chips connected together through a system bus and control lines, at least one of said additional individual circuit chips having an internal control register, said register being loaded with control bits from said system bus in response to initialization of said computer system, the improvement comprising:

means within said at least one of said chips that is responsive to signals in said control lines for enabling loading of said internal control register with control bits from said system bus in response to said initialization of said computer system;

means within said at least one of said chips for providing a timing pulse to said other circuits, said timing pulse providing means including means responsive to a group of one or more of said control bits loaded in said control register for setting a duration of said timing pulse;

means responsive to said internal control register being loaded with control bits for disabling said loading means until a subsequent initialization of said computer system; and

said microprocessor providing software control of the control bits loaded into said control register and thus the duration of said timing pulse, wherein said at least one of said additional individual circuit chips includes at least one conductive pin extending outward of said at least one of said chips and connected to a circuit portion thereon that includes means responsive to a group of one or more of said control bits when loaded in said control register for connecting the pin to receive the timing pulse, thereby allowing the timing pulse to be measured from outside the at least one of said chips.

5,193,200

COMPUTER-MONITOR EXTENDED RANGE COMMUNICATIONS LINK FOR ATTENUATING AND SUBSEQUENTLY RESTORING HIGH FREQUENCY COMPONENTS OF TRANSMITTED VIDEO SIGNALS

Robert R. Asprey, Harvest, and Remigius G. Shatas, Huntsville, both of Ala., assignors to Cybex Corporation, Huntsville, Ala.

Continuation-in-part of Ser. No. 95,140, Sep. 11, 1987, Pat. No. 4,885,718. This application Dec. 5, 1989, Ser. No. 447,010

Int. Cl.[5] G06F *3/00, 3/14*

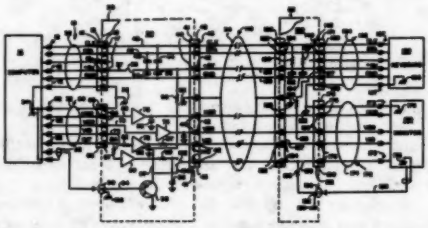
U.S. Cl. 395—800 **13 Claims**

1. A communications link for coupling at least video signals comprising horizontal sync (HS), primary RED, GREEN, and BLUE and secondary red, green, and blue signals from a computer to a distantly located monitor, comprising:

a plurality of first discrete amplification means, one of each said first amplifications means coupled to one of each said HS, primary RED, GREEN, and BLUE, and secondary red, green, and blue signals, with a selected resistance in series between said secondary red, green, and blue signals and respective said first amplification means, for amplifying said video signals from said computer;

a plurality of discrete attenuation means, one of each said attenuation means coupled to one of each said plurality of first amplification means, for attenuating high frequency components of said video signals which radiate interfering crosstalk from one adjacent conductor to another and for providing attenuated video signals;

a cable having a plurality of discrete, adjacent conductors, one of each said conductors coupled to one of each of said plurality of attenuation means and being up to 300 feet long, said plurality of conductors conveying said attenuated video signals;



a plurality of discrete cable termination means, one of each said cable termination means coupled to one of each said conductors conveying a corresponding said attenuated video signal, for reducing crosstalk; and

a plurality of second discrete amplification means, one of each said second amplification means coupled to one of each said cable termination means, for receiving said attenuated video signals from said plurality of said cable termination means and having a selected voltage threshold such that when a terminated, attenuated video signal rises to and above said threshold, said second amplification means is triggered "on", for restoring said high frequency components to said video signals and providing said restored video signals to said monitor.

5,193,201

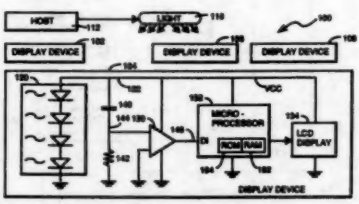
SYSTEM FOR CONVERTING A RECEIVED MODULATED LIGHT INTO BOTH POWER FOR THE SYSTEM AND IMAGE DATA DISPLAYED BY THE SYSTEM

LaRoy Tymes, 4032 Campana Dr., Palo Alto, Calif. 94306

Filed Apr. 23, 1990, Ser. No. 512,946

Int. Cl.[5] G06F *1/26, 3/00, 15/74*

U.S. Cl. 395—800 **8 Claims**



1. A data processing device, comprising:

data processing means, including a data processor, for performing specified data processing tasks;

photodiode means, coupled to said data processing means, for receiving modulated light and converting said re-

ceived modulated light into an electrical voltage which provides power to said data processing means; and

demodulating means, coupled to said photodiode means and said data processing means, for demodulating said electrical voltage so as to generate a stream of data signals, and for transmitting said stream of data signals to said data processing means;

wherein said data processing tasks performed by said data processing means includes outputting image signals corresponding to said stream of data signals generated by said demodulating means;

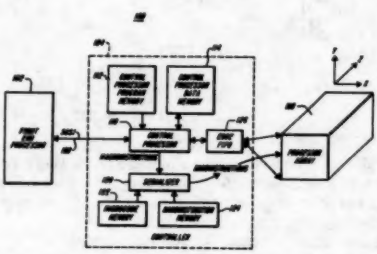
said data processing device further including display means, coupled to said data processing means, for displaying images corresponding to said image signals output by said data processing means, said display means being coupled to said photodiode means, whereby said photodiode means powers said display means by said electrical voltage generated from said photodiode means.

5,193,202

PROCESSOR ARRAY WITH RELOCATED OPERAND PHYSICAL ADDRESS GENERATOR CAPABLE OF DATA TRANSFER TO DISTANT PHYSICAL PROCESSOR FOR EACH VIRTUAL PROCESSOR WHILE SIMULATING DIMENSIONALLY LARGER ARRAY PROCESSOR

James H. Jackson, and Ming-Chih Lee, both of Cary, N.C., assignors to Wavetracer, Inc., Acton, Mass.

Filed May 29, 1990, Ser. No. 529,947
Int. Cl.[5] G06F *15/80, 12/06*
U.S. Cl. 395—800 **10 Claims**



1. A parallel processing system including a virtual processing instruction and address generator, for generating a plurality of processor cell instructions and corresponding physical processor cell operand memory addresses for a multi-dimensional processor array having at least one physical dimension that differs from a corresponding multi-dimensional problem dimension selectable from a plurality of multi-dimensional problem dimensions, comprising:

a multi-dimensional processor array including a predetermined number of physical processor cells arranged in a multi-dimensional array having predetermined dimensions, each physical processor cell having a predetermined amount of associated memory;

means for providing said plurality of selectable multi-dimensional problem dimensions;

means, responsive to the means for providing the plurality of selectable multi-dimensional problem dimensions and to the predetermined number of physical processor cells arranged in said multi-dimensional array having said predetermined dimensions, for assigning, for each dimension of said plurality of selectable multi-dimensional problem dimensions, a number of virtual processors to be associated with each of said predetermined number of physical processor cells, and for arranging, for each physical processor cell, said number of virtual processors in a predetermined multi-dimensional configuration as a function of said plurality of selectable multi-dimensional problem dimensions and of the predetermined number of physical processor cells, and for forming a multi-dimensional array of virtual processor cells having a plurality of multi-dimensional dimensions corresponding to said plurality of selectable multi-dimensional problem dimensions;

means, responsive to the means for assigning the number of virtual processors to be associated with each of said predetermined number of physical processor cells and to said arrangement of said number of virtual processors in a predetermined multi-dimensional configuration, for partitioning said predetermined amount of associated physical processor cell memory into a number of virtual processor memory segments corresponding to the number of virtual processors associated with each physical processor cell, for defining the address space of each virtual processor associated with each physical processor cell, and for defining, for each virtual processor, a physical processor cell memory address corresponding to a base virtual processor operand memory address defining the beginning operand memory address for each of said number of virtual processors associated with each physical processor cell;

means for providing one or more processor cell instructions, each of said processor cell instructions including operand address data;

means, responsive to said means for providing one or more processor cell instructions, for providing a virtual operand memory address for each operand to be processed by each virtual processor of said multi-dimensional array of virtual processors as directed by each processor cell instruction;

means, responsive to said means for providing each of said virtual operand memory addresses and to said means for defining said virtual processor base memory addresses, for summing each virtual operand memory address with a virtual processor base memory address, to produce a physical processor cell address relocated operand memory address for directly addressing within each physical processor cell, each virtual processor operand to be processed, and for any given processor cell instruction requiring operand data movement, for providing for each address relocated operand memory address, a value indicating the relative physical processor cell distance to be moved in each dimension;

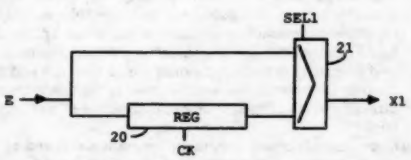
means, responsive to said means for producing the physical processor cell address relocated operand memory address of each operand to be processed, and to said means for providing one or more processor cell instructions, for merging a processor cell instruction with a corresponding physical processor cell address relocated operand memory address, to produce an address relocated processor cell instruction to be broadcast to each virtual processor cell of the processor array.

5,193,203

SYSTEM FOR REARRANGING SEQUENTIAL DATA WORDS FROM AN INITIAL ORDER TO AN ARRIVAL ORDER IN A PREDETERMINED ORDER

Alain Artieri, Meylan, France, assignor to SGS-Thomson Microelectronics, S.A., Gentilly, France

Filed Jul. 2, 1990, Ser. No. 546,113
Claims priority, application France, Jul. 3, 1989, 89 09273
Int. Cl.[5] G06F *7/00*
U.S. Cl. 395—800 **4 Claims**



1. A pipeline data shuffler receiving successive trains of

sequential data words, and rearranging said sequential data words in each said train according to a predetermined order comprising:

a plurality of elementary processing units arranged and connected in series, each said elementary processing unit comprising:

an input;

an output;

a one-word storage register for temporarily storing one of said data words receiving from said input;

steering means for controlling the elementary processing unit to connect the input to the output through the register for temporarily storing the data word in response to a first level of a control signal and for connecting the input directly to the output thereby bypassing the register in response to a second level of the control signal; and

means, coupled to each said elementary processing unit, for periodically and concurrently supplying to each of the steering means of each said elementary processing unit a sequence of said control signals based upon a number of sequential data words in said each train and determined as a function of said predetermined order to rearrange the sequential data words.

5,193,204

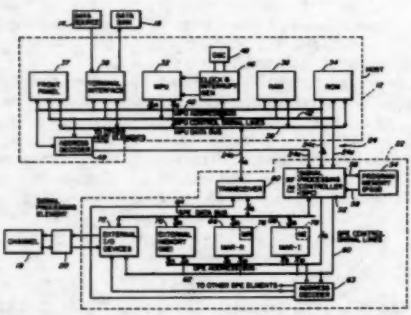
PROCESSOR INTERFACE CIRCUITRY FOR EFFECTING DATA TRANSFERS BETWEEN PROCESSORS

Shahid U. H. Qureshi, Natick, Mass., and George P. Chamberlin, Scottsdale, Ariz., assignors to Codex Corporation, Mansfield, Mass.

Continuation of Ser. No. 147,109, Jan. 21, 1988, abandoned, which is a continuation of Ser. No. 586,681, Mar. 6, 1984, abandoned. This application Feb. 7, 1990, Ser. No. 478,068

Int. Cl.[5] G06F *13/12*

U.S. Cl. 395—800 **4 Claims**



1. Apparatus for effecting a transfer of data between a first processor and a second processor in accordance with data transfer commands sent from said first processor to said second processor, said processors each having a program instruction memory, said processors operating independently and simultaneously when no data transfer is occurring between said processors, said apparatus comprising:

data transfer circuitry connected between said processors for transferring said data;

a program instruction decoder operably coupled by routing circuitry to said first processor and operably coupled to the program instruction memory of said second processor, said first processor sending said data transfer commands to said program instruction decoder which decodes said data transfer commands and sends signals to said data transfer circuitry to effect the transfer of data between said processors;

said second processor executing instructions stored in the program instruction memory of said second processor by decoding said instructions by said program instruction decoder when no data transfer is occurring between said processors; and

interface circuitry, coupled to one of said processors, for delivering to an information-carrying channel a carrier signal modulated by said one processor in accordance with said data transferred between said processors, said interface circuitry also for accepting a modulated carrier signal of data for processing by one of said processors.

5,193,205

PIPELINE PROCESSOR, WITH RETURN ADDRESS STACK STORING ONLY PRE-RETURN PROCESSED ADDRESS FOR JUDGING VALIDITY AND CORRECTION OF UNPROCESSED ADDRESS

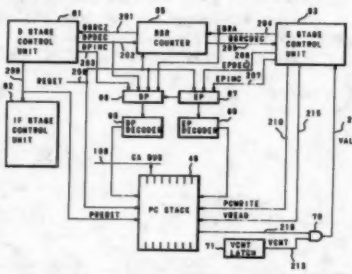
Masahito Matsuo, and Toyohiko Yoshida, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 28, 1989, Ser. No. 317,253

Claims priority, application Japan, Mar. 1, 1988, 63-49093; Apr. 7, 1988, 63-86704

Int. Cl.[5] G06F *9/38, 9/40, 9/42*

U.S. Cl. 395—800 **5 Claims**



1. A data processor having a pipeline processing mechanism which processes instructions including subroutine call instructions and subroutine return instructions in at least two stages, comprising:

an instruction memory for storing instructions;

a processor memory for storing a pre-return processed address;

a stack means;

a first writing means for writing an unprocessed address to said stack means, said unprocessed address decodable into a return address;

a second writing means for writing said pre-return processed address to said processor memory;

an address reading means for reading said pre-return processed address from said processor memory, said address reading means controlled by a first stage of said at least two stages;

an instruction fetching means for fetching a first instruction from said instruction memory at a location indicated by said pre-return processed address written to said processor memory;

a pipeline processing means for fetching a second instruction from said instruction memory at a location indicated by said unprocessed address written to said stack means, and for decoding said second instruction; and

a judging means for judging whether said pre-return processed address accurately represents said return address; and

an execution means for executing said first instruction when said judging means judges that said pre-return processed address is the same as said return address, otherwise said execution means executing said second instruction after said second instruction is decoded by said pipeline processing means.

5,193,206

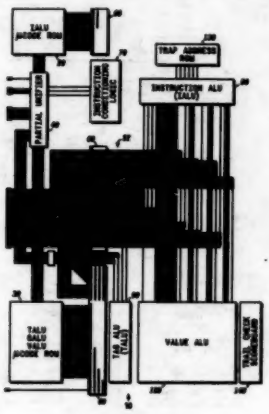
REDUCE INSTRUCTION SET MICROPROCESSOR

Jonathan W. Mills, Bloomington, Ind., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 457,628, Dec. 27, 1989, abandoned. This application Aug. 10, 1992, Ser. No. 926,366

Int. Cl.[5] G06F 9/22

U.S. Cl. 395—800 **13 Claims**



1. A reduced instruction set microprocessor for processing operations designated by a plurality of tags, the microprocessor comprising:

means for processing instructions of an instruction set;

means for partially unifying the plurality of tags within the instruction set, generating a microcode address and an instruction condition signal when the plurality of tags are equal to a first set of values, the means for partially unifying coupled to the means for processing instructions;

means for latching the instructions of the instruction set, the means for latching coupled to both the means for processing instructions and the means for partially unifying;

means for generating alternate instructions of an alternate instruction set coupled to the means for partially unifying, the means for generating producing the alternate instructions when the plurality of tags are equal to a second set of values;

a tag arithmetic logic unit (ALU) for sending instruction decode information to the means for latching, the tag ALU coupled to the means for latching and to the means for partially unifying;

a value ALU for data fetching and data storing including storing of a status bit value, the value ALU coupled to the means for generating alternate instructions and to the means for latching; and

a trail checking ALU for tracking unbound variables, the trail checking ALU coupled to the value ALU.

5,193,207

LINK SORTED MEMORY

Stanley J. Vander Vegt, Los Angeles, and Darrell W. Chan, Monterey Park, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed May 31, 1990, Ser. No. 531,199

Int. Cl.[5] G06F 15/74, 13/00

U.S. Cl. 395—800 **3 Claims**

1. A link sorted memory comprising:

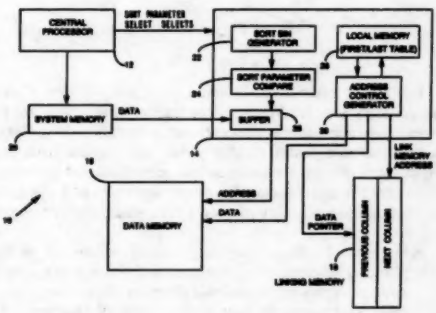
data memory means for storing unsorted data words in consecutive memory address locations;

linking memory means for storing selected memory address locations related to each memory address location in the data memory means; and

sorting means coupled to the data memory means and to the linking memory means, for receiving unsorting data words containing a predetermined sort parameter, for scanning a selected field of each of the incoming data words to find the predetermined sort parameter contained therein, for transferring the unsorted data words into consecutive memory address locations in the data memory means, for storing the lowest and highest memory address locations of the data words that contain the predetermined sort parameter, and for each memory address location in the data memory means, storing the previous and subsequent address locations of data words containing the same predetermined sort parameter in the linking memory means as a table of links, wherein the sorting means comprises:

sort bin generator means for receiving sort parameters,

local memory means coupled to the sort bin generator means for storing the lowest and highest memory address locations of the data words that contain the predetermined sort parameter,



sort parameter comparison means coupled to the sort bin generator means for scanning a selected field of each of the incoming data words to find the predetermined sort parameter contained therein, and

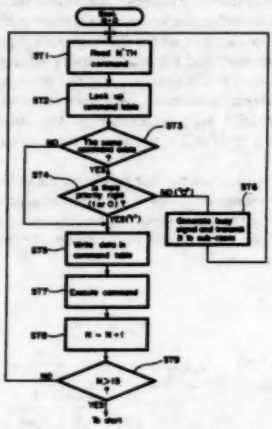
address control generator means coupled to the sort parameter comparison means, the local memory means, the data memory means and the linking memory means for transferring the unsorted data words into the consecutive memory address locations in the data memory means and storing the previous and subsequent address locations of data words containing the same predetermined sort parameter in the linking memory means;

and whereby sorting of the unsorted data words is achieved by retrieving the memory address location from the linking memory means of the first occurrence of a data word associated with a chosen sort parameter, referencing the table of links to sequentially retrieve the remainder of data words having the sort parameter, which is accomplished by sequentially retrieving the data words located at memory address locations identified in the table of links of the linking memory means until the last memory address location is referenced.

5,193,208
SIGNAL TRANSMISSION SYSTEM

Teppei Yokota, Chiba; Susumu Morioka, Saitama; Yoshihiro Machinguchi, and Yuji Yamada, both of Tokyo, all of Japan, assignors to Sony Corporation, Japan

Filed Apr. 26, 1991, Ser. No. 691,986
Claims priority, application Japan, May 14, 1990, 1-23317; May 21, 1990, 1-30748; May 23, 1990, 1-33228
Int. Cl.[5] H04H 1/00
U.S. Cl. 455—4.1 4 Claims



1. A signal transmission system in which a plurality of electronic apparatus for respectively transmitting audio and/or video information are concentratedly installed in a single room, and said audio and/or video information from said plurality of said electronic apparatus are modulated by respective carrier frequencies in a frequency-multiplexed fashion and transmitted to a plurality of rooms via a single cable, comprising:

main control means, including means connected to said plurality of electronic apparatus and transmitting remote control signals to control said plurality of electronic apparatus, and means for modulating said audio and/or video information and said remote control signals in a frequency-multiplexed fashion and for allocating said audio and/or video information and said remote control information on respective channels, each having said carrier frequencies;

a plurality of receiving means, including means for selectively receiving one of said audio and/or video information from said electronic apparatus through said main control means, and input means for inputting a command to request to transmit said audio and/or video information from said electronic apparatus, and means for transmitting said remote control signals modulated by a predetermined carrier frequency to said main control means;

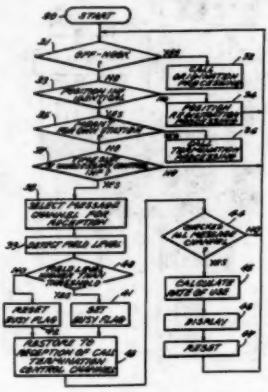
a cable means for transmitting said frequency-multiplexed, modulated audio and/or video signals and remote control signals between said main control means and said plurality of receiving means; and

means for giving priority to at least one of said plurality of receiving means which first transmitted a remote control signal to said main control means at the first time to operate one of said electronic apparatuses, and counting means for counting which is started under a condition when another of said receiving means has stopped said operation, and erasing means for erasing said priority after said counting means counts a predetermined number of times.

5,193,209
MOBILE TELEPHONE SYSTEM FOR PRODUCING BUSYNESS INFORMATION FOR SPEECH CHANNELS

Koji Maeda, and Shinji Kawamura, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Apr. 27, 1990, Ser. No. 515,453
Claims priority, application Japan, Apr. 27, 1989, 1-106005; Apr. 27, 1989, 1-106006
Int. Cl.[5] H04Q 7/00
U.S. Cl. 455—34.2 6 Claims



1. Vehicle-mounted telephone equipment for communicating with a base station by using one of a predetermined number of radio message channels, comprising:

detecting means for detecting a respective electric field level of each of said predetermined number of message channels to produce a respective detected electric field level;

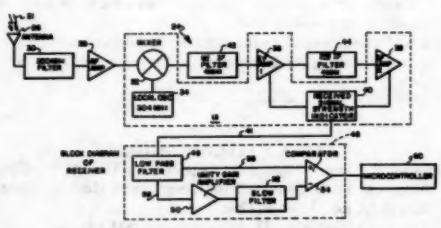
counting means responsive to said detected electric field levels for counting the number of the message channels whose electric field levels are higher than a predetermined level; and

means for comparing the counted number to a preset number and for producing busyness information when said counted number exceeds said predetermined number.

5,193,210
LOW POWER RF RECEIVER

Michael G. Nicholas, Hawthorn Woods, and Warren Guthrie, Glen Ellyn, both of Ill., assignors to ABC Auto Alarms, Inc., Elk Grove Village, Ill.

Filed Jul. 29, 1991, Ser. No. 737,256
Int. Cl.[5] H04B 7/00
U.S. Cl. 455—38.1 20 Claims



1. A low power RF receiver for receiving a modulated carrier signal having a coded transmission so as to remotely control a number of vehicular devices comprising:

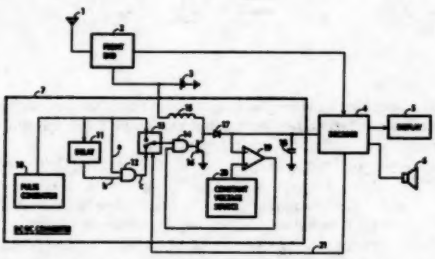
input means responsive to said modulated carrier signal for generating a RF signal;
oscillator means for generating a desired local oscillator frequency signal;
mixer means responsive to said RF signal and said local oscillator frequency signal for generating an IF signal;
first filter means responsive to said IF signal for generating a first filtered signal;
first FI amplifier means responsive to said first filtered signal for generating a first amplified signal;
second filter means responsive to said first amplified signal for generating a second filtered signal;
second IF amplifier means responsive to said second filtered signal for generating a second amplified signal;
signal strength means connected to said first and second IF amplifier means and responsive to the amount of current drawn by said first and second IF amplifier means, said signal strength means generating a strength indicator signal derived form assumed current of the first and second amplified signal which is proportional to the strength of the modulated carrier signal received by said input means; and
adaptive threshold means being responsive to comparing said strength indicator signal to a varied threshold reference level to eliminate noise and for generating a logical signal based on said comparison of said varied threshold reference level to said strength indicator signal.

5,193,211

POWER SAVING DC-DC CONVERTER FOR RADIO PAGERS

Hideaki Nobusawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 30, 1991, Ser. No. 737,546
Claims priority, application Japan, Jul. 30, 1990, 2-201634
Int. Cl.[5] H04Q *3/02, 7/14*
U.S. Cl. 455—38.2 **8 Claims**



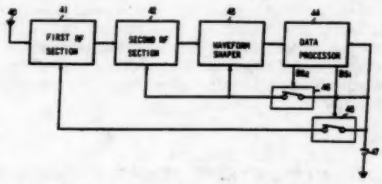
1. A DC-DC converter for a radio pager having a front end and a decoder for processing an incoming signal received by said front end, wherein the front end is powered by a battery and the decoder generates a first signal indicating a first operating state of the decoder and a second signal indicating a second operating state of the decoder, the DC-DC converter comprising:
variable duty pulse generator means for generating a first pulse signal of a first duty ratio in response to said first signal or a second pulse signal of a second duty ratio in response to said second signal;
a voltage inducing circuit connected to said battery for receiving a DC voltage therefrom, the circuit including an inductor and a gate-controlled switching element coupled thereto, the switching element being responsive to either of the first and second pulse signals generated by said variable duty pulse generator for allowing a current to periodically pass through the inductor for a varying duration proportional to the duty of either of said pulse signals and inducing in said inductor a voltage higher than the DC voltage of said battery;
a capacitor coupled to the inductor for storing DC energy proportional to the duration of said current and powering the decoder with a voltage developed therein; and
power savings means for comparing the voltage developed in the capacitor with a reference voltage and preventing the voltage in said capacitor from increasing when the voltage developed in the capacitor is higher than the reference voltage.

5,193,212

CIRCUIT FOR SAVING BATTERY FOR USE IN A RADIO PAGING RECEIVER AND METHOD THEREOF

Jin-Hyun Son, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jan. 4, 1990, Ser. No. 460,995
Claims priority, application Rep. of Korea, May 31, 1989, 1989-7300
Int. Cl.[5] H04Q *3/02*; H04B *7/02, 1/16*
U.S. Cl. 455—38.3 **20 Claims**



1. A circuit for saving battery power in a radio paging receiver having first and second radio frequency sections, said circuit generating a first battery saving signal and a second battery saving signal, comprising:
waveform shaping means, coupled to receive said second battery saving signal, for charging a reference voltage to a level of a second voltage, converting output of said second radio frequency section into a digital signal, and cutting off a discharging path of said reference voltage for maintaining said reference voltage at a level of a first voltage;
means for generating said first battery saving signal and said second battery saving signal, and for processing data received from the output of said second radio frequency section, said first battery saving signal and said second battery saving signal being held in a specified state in accordance with the digital signal received from said waveform shaping means;
means for providing the first radio frequency section with power on a basis of said first battery saving signal; and
means for providing the second radio frequency section and said waveform shaping means with power on a basis of said second battery saving signal.

5,193,213

FM BROADCAST BAND SUBCARRIER RECEIVER

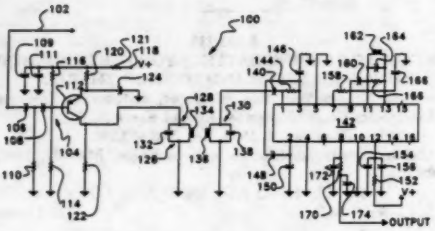
Hai-Jong H. Chon, 245 Bittersweet Rd., Orange, Conn. 06477

Filed Mar. 26, 1990, Ser. No. 499,030
Int. Cl.[5] H04B *5/00, 1/16*
U.S. Cl. 455—45 **16 Claims**

1. An FM subcarrier receiver of the type useful for detection of a relatively high frequency desired subcarrier signal transmitted on an FM carrier which includes a baseband signal and said relatively high frequency subcarrier signal, comprising:
(a) radio frequency means for receiving a radio frequency signal having frequency modulated baseband and subcarrier components and outputting said baseband and relatively high frequency subcarrier signals;
(b) a high pass filter for receiving the output of said radio frequency means;
(c) a tuned circuit for receiving the output of said high pass filter, said tuned circuit comprising a first inductor of fixed

inductance and a first capacitor tuned substantially to the frequency of the subcarrier which one wishes to detect;

(d) a second tuned circuit tuned to said subcarrier which one wishes to detect, said second tuned circuit comprising a second inductor of fixed inductance and a second capacitor, said first and second inductors comprising ferrite



cores and adjustably positioned with respect to each other to allow magnetic coupling therebetween; and

(e) a subcarrier demodulator coupled to said second inductor and said second capacitor for providing an audio signal corresponding to the information carried by said desired subcarrier.

5,193,214

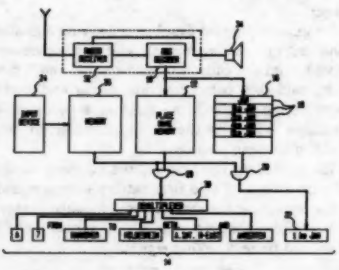
VEHICULAR RADIO RECEIVER WITH STANDARD TRAFFIC PROBLEM DATABASE

Claus Mardus, Bad Salzdetfurth; Ralf Duckeck, and Peter Brügas, both of Hildesheim, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 459,141, Dec. 29, 1989, abandoned. This application Dec. 9, 1991, Ser. No. 803,570

Int. Cl.[5] H04B *7/00*; G08G *1/09*

U.S. Cl. 455—54.2 **6 Claims**



1. A radio receiver having;

a decoder (10) for decoding traffic announcements including traffic problem codes received in digital form,

at least one memory device (12, 16) adapted to contain both a plurality of items of factual information (b) and route specific characteristics, wherein said items of factual information respectively correspond to said traffic problem codes,

means (14), connected to an output of said decoder, for interpreting said traffic problem codes and retrieving corresponding traffic announcement information from said at least one memory device (12, 16) and indicating it to a vehicle operator by at least one of visual and acoustical indications,

wherein

each of said items of factual information (b) corresponding to the traffic problem code is stored, together with any numerical values (c) quantifying a distance parameter of the traffic problem, at a single respective address in said at least one memory device, thereby facilitating compact transmission of said traffic problem code and rapid retrieval of the hems of factual information; and

each of said items of factual information (b) provided with the distance parameter numerical values (c) is also identically stored again in said at least one memory device without the numerical values.

5,193,215

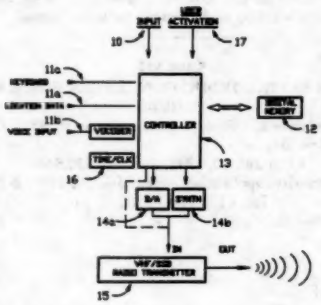
LOCATION SIGNALLING DEVICE FOR AUTOMATICALLY PLACING A RADIO DISTRESS CALL

Anthony L. Olmer, 1435 Bedford St., Apt. 6-E, Stamford, Conn. 06905

Filed Jan. 25, 1990, Ser. No. 470,267

Int. Cl.[5] H04B *7/00, 1/034*; G08G *1/123*

U.S. Cl. 455—66 **12 Claims**



1. A location signalling device for use in combination with a coordinate location data generating unit and a radio transmitter having a transmitter input, comprising:

a device input/output port for communicating with the coordinate location data generating unit and entering location data provided from the coordinate location data generating unit into the location signalling device;

a memory for storing the entered coordinate location data;

a timer/clock having periodic time setting means for setting predetermined periodic time intervals for entering coordinate location data;

a device controller coupled to said device input/output port, said timer/clock, and said memory, including a microprocessor having programmed location data updating means for automatically communicating with the coordinate location at a generating unit to provide current coordinate location data at the predetermined periodic time intervals set by said timer/clock and storing current location data entries in said memory in order as to time of entry;

a device output including an output terminal connected to the transmitter input of the radio transmitter for automatically retrieving a most current entry of the location data stored in memory and sending said most current location data to the input of the radio transmitter in response to a distress activation signal; and

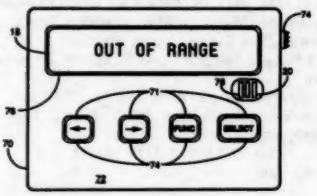
activation means for providing the activation signal to said device output means in response to an actuating action by a user when a distress call is to be sent.

5,193,216

DETECTING OUT OF RANGE IN RESPONSE TO A LOSS OF SIGNAL AND A HISTORY OF APPROACHING OUT OF RANGE PRIOR TO THE LOSS OF SIGNAL

Walter L. Davis, Coral Springs, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 1, 1990, Ser. No. 531,603
Int. Cl.[5] H04B *17/00*
U.S. Cl. 455—67.7 9 Claims



1. A method in a communications receiver for receiving a signal transmitted by a transmitter, the signal having a signal strength, the method comprising the steps of:

measuring the signal at a plurality of times to acquire a plurality of received signal strength values indicating the signal strength at the plurality of times;

storing the plurality of received signal strength values;

detecting loss of the signal; and

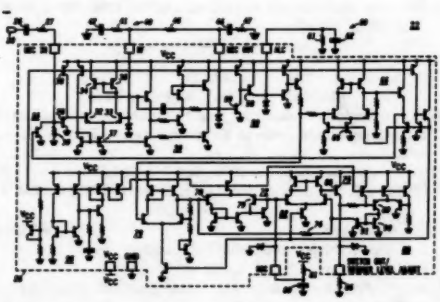
determining the communications receiver is out of range of the transmitter if both the loss of the signal is detected and ones of the plurality of received signal strength values stored within a predetermined time prior to detection of the loss of the signal indicate successively decreasing signal strength for the predetermined time before the loss of the signal was detected.

5,193,217

LOW VOLTAGE IC FOR VOICE OPERATED TRANSCEIVER

Gerald K. Luna, Harbour City; Man Chan, Ha Che, and Chi M. Lin, Kowloon, all of Hong Kong, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 23, 1990, Ser. No. 513,453
Int. Cl.[5] H04B *1/46*
U.S. Cl. 455—79 5 Claims



1. A portable transceiver comprising:

a transmitter;

a receiver; and

a transmit/receive switch coupled to the transmitter and having a microphone operatively connected thereto, the transmit/receive switch being constructed to receive input signals from the microphone and to turn on the transmitter only when the input signals include a voice signal, the transmit/receive switch including

and audio amplifier coupled to receive input signals from the microphone and including variable circuitry providing a variable gain and bandwidth,

a level detector connected to the audio amplifier for providing an output level signal corresponding to the level of input signals applied to the audio amplifier,

a level adjusting circuit coupled to the level detector and the audio amplifier and providing automatic level control and including variable circuitry providing variable level detecting attack time and variable attenuation,

a noise monitoring circuit coupled to receive the output level signal from the level detector and including variable circuitry providing a variable attack and decay time connected to produce an output signal from the noise monitoring circuit when a voice signal occurs in the input signal of the audio amplifier,

a comparator circuit having two inputs and coupled to receive the output level signal from the level detector at one input and the output signal from the noise monitoring circuit at the other input,

the comparator circuit further including a trigger level and a circuit for adjusting the trigger level, the comparator being connected to supply a switching signal to the transmitter and including variable circuitry for adjusting the trigger level of the comparator,

the audio amplifier, the level detector, the level adjusting circuit, the noise monitoring circuit, and the comparator circuit all being direct coupled circuits and all being formed as an integrated circuit which operates in a range below approximately 1.8 volts.on a single semiconductor chip, and

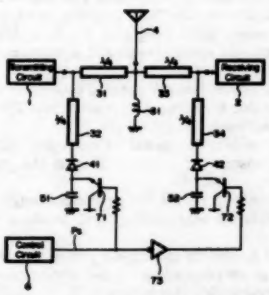
no more than eight external connections to the integrated circuit connecting the variable circuitry included in the audio amplifier, the variable circuitry included in the level adjusting circuit, the variable circuitry included in the noise monitoring circuit, and the variable circuitry included in the trigger level adjusting circuit external to the integrated circuit, providing the coupling between the microphone and the audio amplifier and the coupling between the audio amplifier and the transmitter and, for connecting power and reference supplies to the integrated circuit.

5,193,218

SIGNAL TRANSMISSION RECEPTION SWITCHING APPARATUS

Norio Shimo, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 4, 1991, Ser. No. 664,214
Claims priority, application Japan, Mar. 8, 1990, 2-057676
Int. Cl.[5] H04B *1/46*
U.S. Cl. 455—80 8 Claims



1. A signal transmission reception switching apparatus in which a transmission signal and a reception signal are selectively switched to access an antenna, comprising:

(a) a first transmission line connected between a transmission

terminal from which the transmission signal is supplied and an antenna terminal, the first transmission line having a length substantially equal to ¼ of an average wavelength λ of the transmission and the reception signals;

(b) a first switching element connected to ground;

(c) a second transmission line connected between a transmission terminal and the first switching element, the second transmission line having a length substantially equal to ¼ of an average wavelength λ of the transmission and the reception signals;

(d) a third transmission line connected between the antenna terminal and a reception terminal to which the reception signal is supplied, the third transmission line having a length substantially equal to ¼ of an average wavelength λ of the transmission and the reception signals;

(e) a second switching element connected to ground;

(f) a fourth transmission line connected between the reception terminal and the second switching element, the fourth transmission line having a length substantially equal to ¼ of an average wavelength λ of the transmission and the reception signals, wherein when the transmission signal is transmitted, the first switching element is turned ON and the second switching element is turned OFF, while when the reception signal is received, the first switching element is turned OFF and the second switching element is turned ON.

5,193,219

VEHICULAR POWER BOOSTER CIRCUITRY FOR MULTI-LEVEL PORTABLE TRANSCEIVER

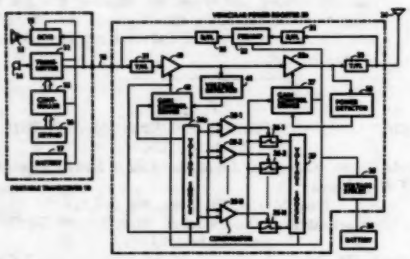
Yoshiharu Tamura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 17, 1990, Ser. No. 569,041

Claims priority, application Japan, Aug. 18, 1989, 1-212334

Int. Cl.[5] H04B *1/38*

U.S. Cl. 455—89 **9 Claims**



1. A mobile radio transceiver comprising:

a portable transceiver comprising a transmitter for generating a radio-frequency (RF) transmit signal, manual power setting means for setting said transmit signal at one of predetermined power levels and a receiver for receiving an RF receive signal; and

a vehicular power booster coupled by a connecting cable to said portable transceiver to receive said RF transmit signal, comprising:

first power detector means for detecting the power of the RF transmit signal received from the portable transceiver;

voltage setting means for generating reference voltages respectively representing said predetermined power levels;

decision means for identifying one of said reference voltages as corresponding to the power detected by said first power detector means;

gain controlled power amplifying means for amplifying said RF transmit signal and applying the power-amplified RF transmit signal to an antenna;

second power detector means coupled to the output of said power amplifying means for detecting power of said power-amplified RF transmit signal; and

gain control means responsive to a difference between the power detected by said second power detector means and said identified reference voltage for controlling the gain of said power amplifying means so that said difference is reduced to a minimum.

5,193,220

DEVICE FOR MOUNTING AN ELECTRONIC PART

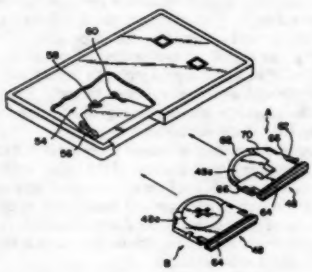
Makoto Ichinohe; Masahiro Matai; Shinjiro Umetsu, and Seiji Nishikawa, all of Tokyo, Japan, assignors to NEC Corporation and Nippon Telegraph and Telephone Corporation, both of Japan

Filed Jun. 1, 1990, Ser. No. 531,838

Claims priority, application Japan, Jun. 2, 1989, 1-139096; Jun. 2, 1989, 1-140883

Int. Cl.[5] H04B *1/38*; H01M *2/10*

U.S. Cl. 455—89 **12 Claims**



1. A radio device, comprising:

(a) electronic circuitry and an antenna, said antenna having antenna related parameters associated therewith;

(b) a battery compartment;

(c) a removable battery pack including a battery, said battery pack being mountable in said battery compartment in first and second positions;

(d) detecting means for detecting the position of said battery pack in said battery compartment and for providing a detecting signal indicative of said position; and

(e) means coupled to said detecting signal and effective for control said antenna related parameters responsive to said detecting signal.

5,193,221

SIGNAL OUTPUT APPARATUS

Kazuteru Saginao, Yokohama, and Hideyuki Okanuma, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 12, 1990, Ser. No. 581,330

Claims priority, application Japan, Sep. 14, 1989, 1-239474

Int. Cl.[5] H04B *1/02*

U.S. Cl. 455—92 **6 Claims**

1. A signal output apparatus comprising:

a CPU section;

output data storage means for storing output data from said CPU section;

main clock signal generating means outputting a main clock signal;

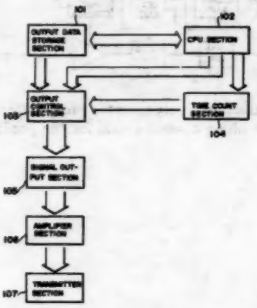
a count circuit receiving said main clock signal and outputting a timing signal equal to a predetermined number of said main clock signals;

output control means for generating an output control signal comprised of "0" data and "1" data according to said output data, said "0" data and "1" data being expressed by different combinations of high level period and low level

period, in response to said timing signal, wherein said output control means includes:

an address selection circuit for decoding an address signal output by said CPU section and selecting an address of said output data storage unit,

a parallel-to-serial circuit for time sequentially outputting the data in said output data storage unit at an address selected by said address selection circuit, and



a one-data variable counter receiving a logical AND between an output from said count unit and an output from said parallel-to-serial circuit at said selected address and outputting said output control signal; and

signal output means, receiving said main clock signal and said output control signal, for outputting said main clock signal intermittently in response to a level change of said output control signal.

5,193,222

SYSTEM FOR INTERRUPTING A TRANSMITTER OUTPUT WAVE

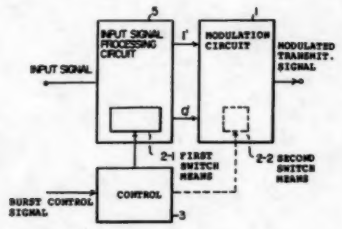
Susumu Sasaki, Fujisawa, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed May 11, 1990, Ser. No. 522,096

Claims priority, application Japan, May 12, 1989, 1-117444

Int. Cl.[5] H04B *1/02*; H01Q *11/12*

U.S. Cl. 455—102 **22 Claims**



1. A transmitter comprising:

a modulator capable of selecting one of two modes of operations depending on types of parallel input signals, in a first mode operation an envelope of an output signal of said modulator never being substantially zero at any instant, in a second mode operation an envelope of said output signal of said modulator being substantially 100% amplitude-modulated or substantially 180 degrees phase-modulated;

first switch means for switching said types of the parallel input signals, between said first mode operation of said modulator and said second mode operation of said modulator;

second switch means for interrupting and resuming an output signal of said modulator while said modulator is in said second mode operation; and

control means for instructing said first and second switch means to operate.

5,193,223

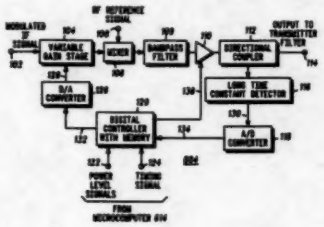
POWER CONTROL CIRCUITRY FOR A TDMA RADIO FREQUENCY TRANSMITTER

Thomas J. Walczak, Woodstock, and Stephen V. Cahill, Palatine, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 632,231, Dec. 20, 1990, abandoned. This application Jul. 27, 1992, Ser. No. 920,178

Int. Cl.[5] H03C *1/62*

U.S. Cl. 455—115 **30 Claims**



1. A transmitter including power control circuitry responsive to level control signals and a transmit intermediate frequency (IF) signal from a signal source for maintaining the magnitude of a radio frequency (RF) output signal at a power level selected from a plurality of power levels by the level control signals, said transmitter comprising:

reference means for generating an RF reference signal;

adjusting means having variable gain for adjusting the transmit IF signal substantially in proportion to the value of a gain control signal to produce an adjusted transmit IF signal;

mixing means for combining the adjusted transmit IF signal and the RF reference signal to produce an RF transmit signal;

amplifying means for amplifying the RF transmit signal to produce the RF output signal;

detecting means coupled to the RF output signal for generating a detector output signal having a value related to the magnitude of the RF output signal; and

control means coupled to the detector output signal for, at a plurality of intervals, sampling the value of the detector output signal, and adjusting the value of the gain control signal in response to the difference between the sampled value of the detector output signal and a desired value of the selected power level.

5,193,224

ADAPTIVE PHASE CONTROL FOR A POWER AMPLIFIER PREDISTORTER

John D. McNicol, Ottawa, and Stephen G. Harman, Nepean, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Apr. 24, 1991, Ser. No. 690,432

Int. Cl.[5] H03F *1/26*; H04B *15/00*

U.S. Cl. 455—126 **8 Claims**

1. A method of adaptively controlling a predistorter to

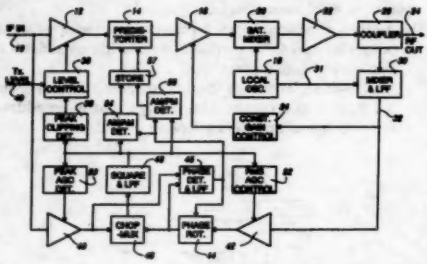
compensate for phase distortion in a power amplifier of an RF(radio frequency) communications system in which an IF(intermediate frequency) input signal is mixed with a local oscillator signal to produce an RF signal for transmission, comprising the steps of:

deriving from the local oscillator signal and the RF signal an IF output signal representative of the output power of the power amplifier;

detecting phase differences between the IF input and IF output signals to produce a phase difference signal;

comparing an amplitude of at least one of the IF input and IF output signals with a comparison level;

selectively inverting the phase difference signal in dependence upon a result of the comparison; and



integrating the selectively inverted phase difference signal to produce a phase control signal for the predistorter.

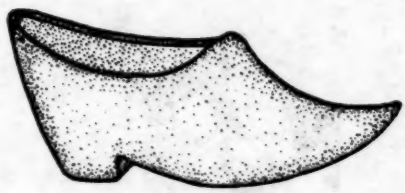
DESIGN PATENTS

GRANTED Mar. 9, 1993

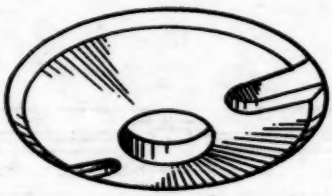
ERRATA

For CLASS	See PATENT NO.
D07-350	333,782

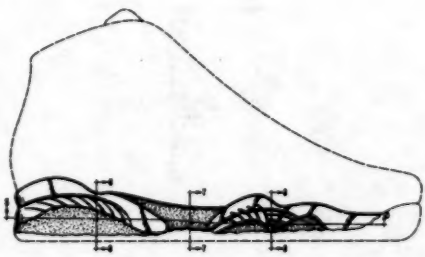
333,718
SHOE
William P. Detmer, P.O. Box 641-Creek Rd., Pleasant Valley, N.Y. 12569
Filed Mar. 30, 1990, Ser. No. 502,425
Term of patent 14 years
U.S. Cl. D2—264



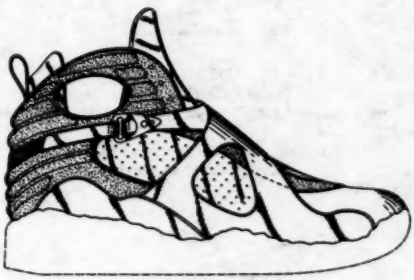
333,719
CLEAT SKIRT
Paul A. Latraverse; Harris L. MacNeill, both of Northborough, and Thomas W. Erich, Holliston, all of Mass., assignors to MacNeill Engineering Company, Inc., Marlborough, Mass.
Filed Aug. 30, 1989, Ser. No. 400,357
Term of patent 14 years
U.S. Cl. D2—314



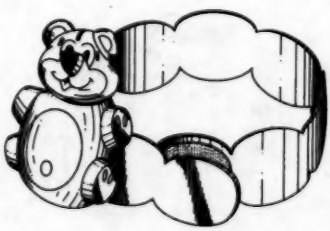
333,720
SHOE MIDSOLE
Tinker L. Hatfield, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Jun. 12, 1992, Ser. No. 897,535
Term of patent 14 years
U.S. Cl. D2—314



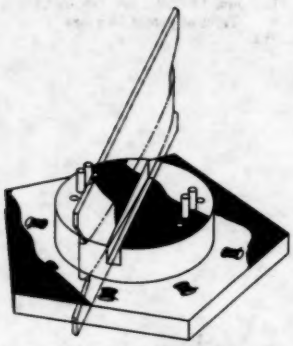
333,721
SHOE UPPER
Tinker L. Hatfield, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Jun. 12, 1992, Ser. No. 897,539
Term of patent 14 years
U.S. Cl. D2—314



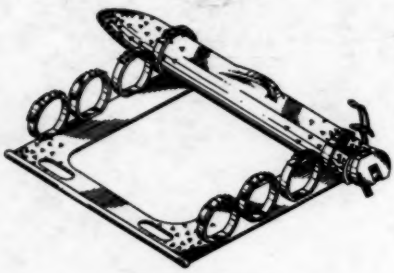
333,722
COMBINED BELT AND BANK FOR A BABY
Joseph J. Ricciardi, 719 S. Water St., Kent, Ohio 44240
Filed Jan. 24, 1991, Ser. No. 645,295
Term of patent 14 years
U.S. Cl. D2—629



333,723
HOLDER FOR FABRIC REELS
Mary E. Risner, P.O. Box 731, Wheeler, Tex. 79096
Filed Mar. 7, 1991, Ser. No. 665,720
Term of patent 14 years
U.S. Cl. D3—23

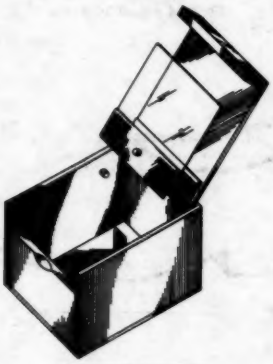


333,724
SKI CARRIER
Theodore Dimacopoulos, 7 Apple Tree La., Walpole, Mass. 02081
Filed Jan. 24, 1991, Ser. No. 645,671
Term of patent 14 years
U.S. Cl. D3—36



333,725
COMBINED SUITCASE AND CADDY
Robert E. Thomas, 650 Floyd Ave., Chula Vista, Calif. 92010
Filed Nov. 13, 1990, Ser. No. 611,954
Term of patent 14 years
U.S. Cl. D3—72

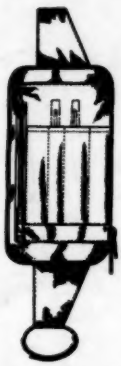
333,726
RECIPE BOX
Samuel L. Beder, Cape Elizabeth, Me., assignor to Sportingwood's, Inc., Portland, Me.
Filed Jan. 8, 1991, Ser. No. 638,653
Term of patent 14 years
U.S. Cl. D3—78



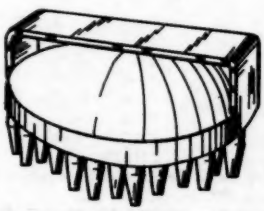
333,727
CARRYING CASE
Peter T. Schurman, Woodbridge, Conn., assignor to The Plastic Forming Company, Inc., Woodbridge, Conn.
Filed Mar. 1, 1991, Ser. No. 662,884
Term of patent 14 years
U.S. Cl. D3—78

333,728
KNIFE SHEATH
Brett P. Seber, Escondido, Calif., assignor to Buck Knives, Inc., El Cajon, Calif.
Filed Sep. 30, 1991, Ser. No. 767,912
Term of patent 14 years
U.S. Cl. D3—102

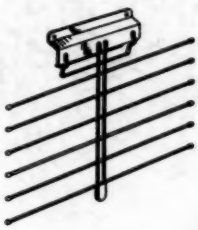
333,729
BELT PACK
Ellen T. Hopp, 11751 Frederick Dr., Garden Grove, Calif. 92640
Filed Jul. 29, 1991, Ser. No. 736,807
Term of patent 14 years
U.S. Cl. D3—106



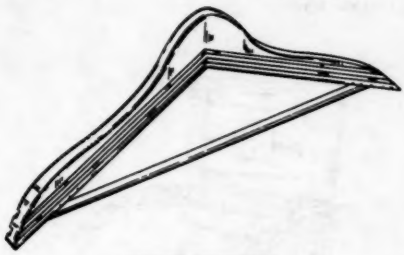
333,730
CURRY COMB
Jack L. Martin, Libertyville, Ill., assignor to Libertyville Saddle Shop, Inc., Libertyville, Ill.
Filed Jun. 27, 1990, Ser. No. 544,495
Term of patent 14 years
U.S. Cl. D4—136



333,731
TIE RACK
Rich Klein, Overland Park, Kans., and Vijay S. Malik, Kansas City, Mo., assignors to Lynk, Inc., Shawnee Mission, Kans.
Filed Oct. 9, 1990, Ser. No. 597,735
Term of patent 14 years
U.S. Cl. D6—317



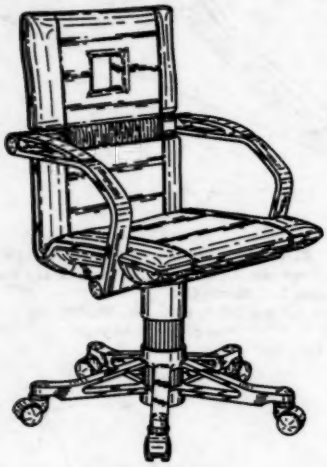
333,732
CLOTHES HANGER BODY
Henry Mattesky, 77 Mawal Dr., Cedar Grove, N.J. 07009
Filed Mar. 26, 1991, Ser. No. 675,476
Term of patent 14 years
U.S. Cl. D6—328



333,733
STACKABLE INTERLOCKING CHAIR
John D. Sammons, Adairsville, Ga., assignor to Church Chair Industries, Inc., Rome, Ga.
Filed Jul. 7, 1992, Ser. No. 909,606
Term of patent 14 years
U.S. Cl. D6—334

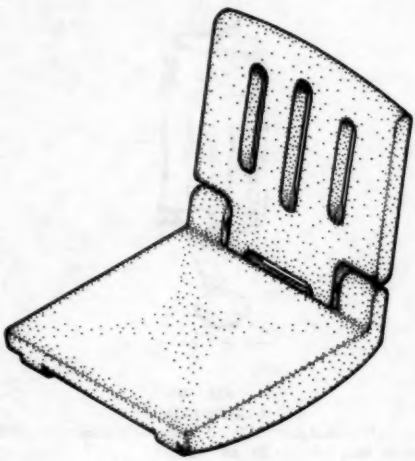
333,734
CHAIR
Stanley L. Wright, 322 Gunwood Rd., Huron, Ohio 44839
Filed Jun. 19, 1990, Ser. No. 540,514
Term of patent 14 years
U.S. Cl. D6—358

333,735
CHAIR
Raymond Carter, Marina del Ray, Calif., assignor to Grammer AG, Amberg, Fed. Rep. of Germany
Filed Mar. 28, 1989, Ser. No. 329,672
Claims priority, application Fed. Rep. of Germany, Oct. 17, 1988, 8802455
Term of patent 14 years
U.S. Cl. D6—366

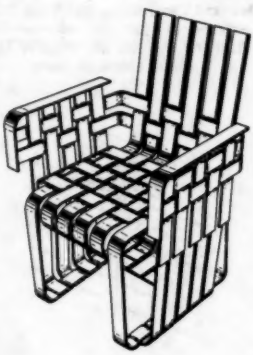


333,736
DENTAL CHAIR
Carl G. Nordstrom, Lake Oswego, Oreg., assignor to A-Dec, Inc., Newberg, Oreg.
Continuation-in-part of Ser. No. 501,657, Mar. 29, 1990. This application Apr. 30, 1991, Ser. No. 694,017
Term of patent 14 years
U.S. Cl. D6—367

333,737
PORTABLE FOLDING ROCKER SEAT
Joe L. Adams, 6203 Funderburg Bend Rd., Pell City, Ala. 35125
Filed Jun. 19, 1990, Ser. No. 540,802
Term of patent 14 years
U.S. Cl. D6—368

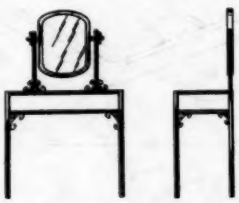


333,738
CHAIR
Frank O. Gehry, Santa Monica, Calif., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Sep. 24, 1990, Ser. No. 587,368
Term of patent 14 years
U.S. Cl. D6—369

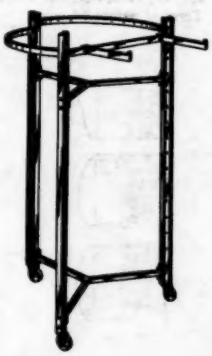


333,739
CHAIR
Michael Yeh, Hacienda Hgts, Calif., assignor to Coaster Co. of America, Inc., Santa Fe Springs, Calif.
Filed May 16, 1990, Ser. No. 523,937
Term of patent 14 years
U.S. Cl. D6—380

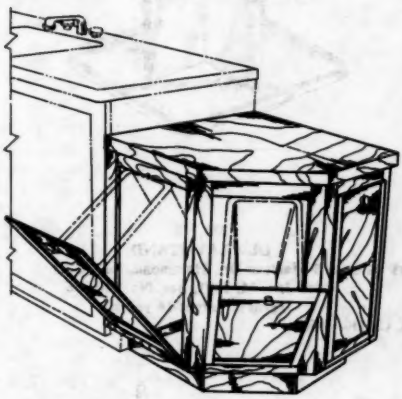
333,740
VANITY
Mark Ma, 1415 Martens Dr., Hammond, La. 70401
Filed May 7, 1990, Ser. No. 519,663
Term of patent 14 years
U.S. Cl. D6—397



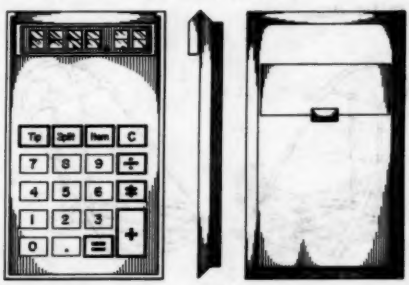
333,741
GARMENT DISPLAY RACK
David Katz, Friendsville, Pa., assignor to Kason Industries, Inc., Binghamton, N.Y.
Continuation of Ser. No. 128,675, Dec. 4, 1987, abandoned. This application Feb. 28, 1991, Ser. No. 662,795
Term of patent 14 years
U.S. Cl. D6—411



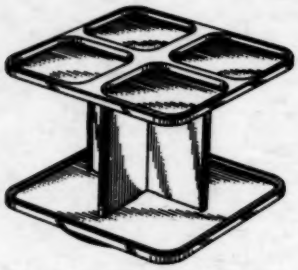
333,742
CABINET FOR RECYCLING BINS
James H. Reutenauer, Jr., and Donna M. Reutenauer, both of R.D. 1, Box 140-D, Chatham, N.Y. 12037
Filed Jul. 1, 1991, Ser. No. 724,355
Term of patent 14 years
U.S. Cl. D6—442



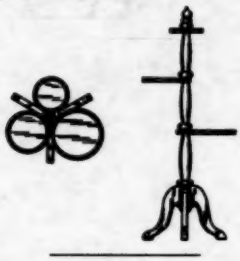
333,743
COMBINED RESTAURANT CHECK TRAY AND CALCULATOR
David H. Johnson, 175 Bartlett Ave., Providence, R.I. 02905
Filed May 13, 1991, Ser. No. 699,558
Term of patent 14 years
U.S. Cl. D6—449



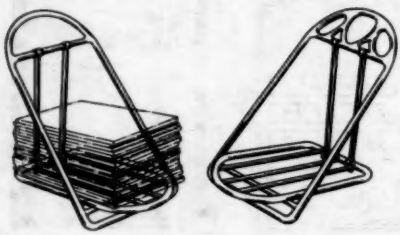
333,744
ROTATABLE TRAY
Larry G. Zimmerman, North Smithfield, R.I., assignor to Dart Industries Inc., Deerfield, Ill.
Filed Apr. 30, 1990, Ser. No. 516,877
Term of patent 14 years
U.S. Cl. D6—457



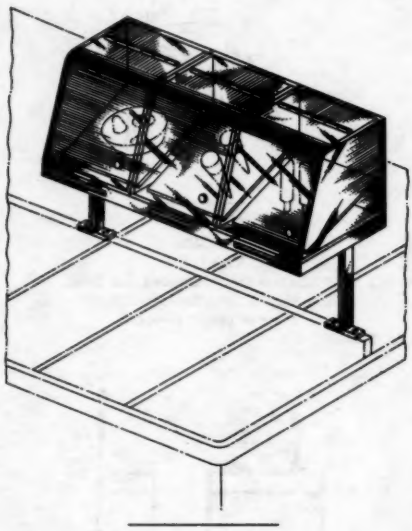
333,745
DISPLAY STAND
Mark Ma, 1415 Martens Dr., Hammond, La. 70401
Filed Jan. 11, 1991, Ser. No. 640,006
Term of patent 14 years
U.S. Cl. D6—460



333,746
MAGAZINE/NEWSPAPER RACK
Gerald D. Wilhite, Duncanville, Tex., assignor to Jokari/US, Inc., Dallas, Tex.
Filed Jan. 10, 1992, Ser. No. 819,502
Term of patent 14 years
U.S. Cl. D6—462

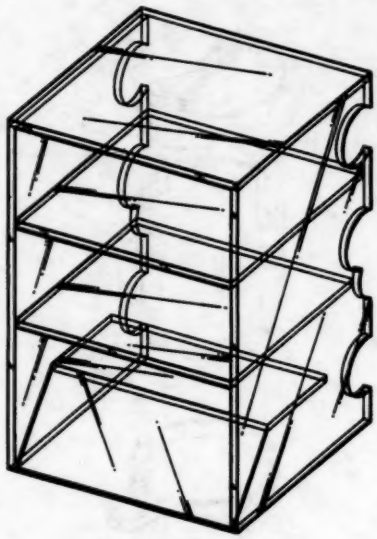


333,747
DISPLAY CASE
Nicholas Uchyn, 33 Sparrowhawk, Irvine, Calif. 92714
Filed Jun. 17, 1991, Ser. No. 716,339
Term of patent 14 years
U.S. Cl. D6—471



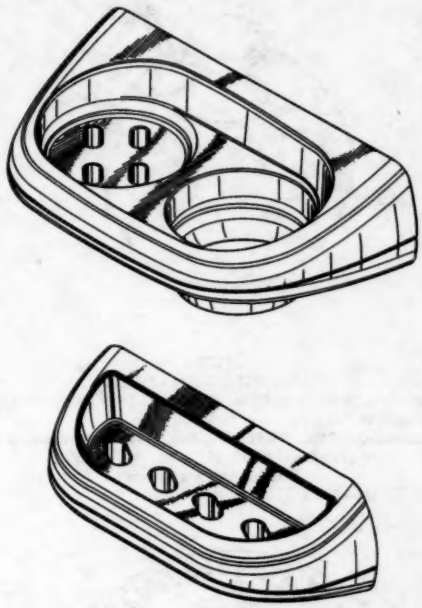
333,748
MERCHANDISING DISPLAY
David C. F. Stoddard, Atlanta, and Ladd M. Orr, Clarkston, both of Ga., assignors to The Mead Corporation, Dayton, Ohio
Filed Apr. 27, 1992, Ser. No. 873,731
Term of patent 14 years
U.S. Cl. D6—479

333,749
STEREO STAND
Miranda Leonard, 492 Beacon St., Boston, Mass. 02115
Filed Aug. 1, 1991, Ser. No. 738,943
Term of patent 14 years
U.S. Cl. D6—479



333,750
CHAIR FRAME
Stephen C. Hess, Birmingham, Ala., assignor to Winston Furniture Company, Inc., Birmingham, Ala.
Filed Aug. 10, 1990, Ser. No. 565,415
Term of patent 14 years
U.S. Cl. D6—500

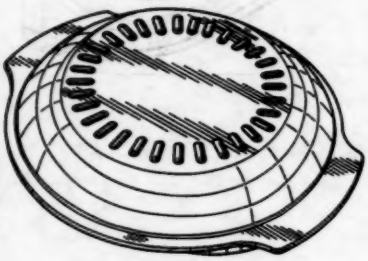
333,751
BATHROOM ACCESSORY SUPPORT FIXTURE
Gregory M. Crook, Columbus, and Kent W. Murphy, Wooster, both of Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio
Filed May 25, 1990, Ser. No. 528,774
Term of patent 14 years
U.S. Cl. D6—524



333,752
INFANT SUPPORT PAD
Cynthia A. Mason, 22 N. Granada Ave., Unit E, Alhambra, Calif. 91801
Filed Aug. 1, 1991, Ser. No. 738,746
Term of patent 14 years
U.S. Cl. D6—596

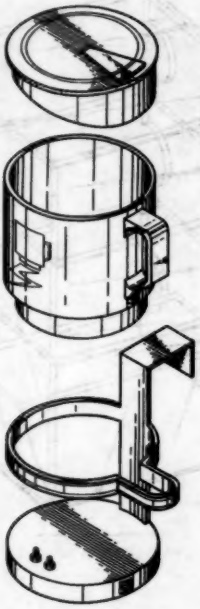
333,753
KETTLE
Bruce Ancona, and Jane Ancona, both of New York, N.Y., assignors to M. Kamenstein, Inc., White Plains, N.Y.
Filed Apr. 30, 1990, Ser. No. 513,591
Term of patent 14 years
U.S. Cl. D7—321

333,754
CASSEROLE DISH COVER
Rino Conti, Stoughton, Mass., assignor to Dart Industries Inc., Deerfield, Ill.
Continuation of Ser. No. 561,532, Aug. 1, 1990, abandoned. This application Jun. 22, 1992, Ser. No. 902,337
Term of patent 14 years
U.S. Cl. D7—392.1



333,755
REUSABLE COFFEE FILTER
Phyllis Oleksiuk, 113 Gilbert Ave., Niles, Ohio 44446
Filed Mar. 4, 1991, Ser. No. 663,651
Term of patent 14 years
U.S. Cl. D7—400

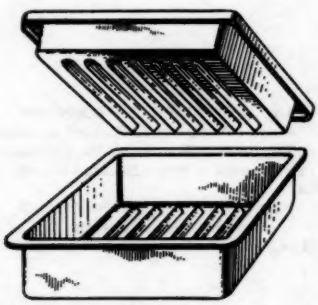
333,756
COMBINED CUP WITH HEATING ELEMENT
Teri R. Campbell, 2625 E. Fork Rd., Aberdeen, Ohio 45101-9792
Filed Dec. 7, 1990, Ser. No. 624,254
Term of patent 14 years
U.S. Cl. D7—507



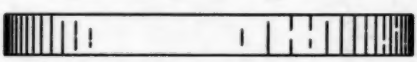
333,757
TRAY
Pieter K. J. DeCoster, Aalst, Belgium, assignor to Dart Industries Inc., Deerfield, Ill.
Filed May 8, 1990, Ser. No. 520,706
Term of patent 14 years
U.S. Cl. D7—550

333,758
CANISTER
Stig Lillelund, Gentofte, Denmark, assignor to Dart Industries Inc., Deerfield, Ill.
Filed Mar. 28, 1991, Ser. No. 677,272
Term of patent 14 years
U.S. Cl. D7—612

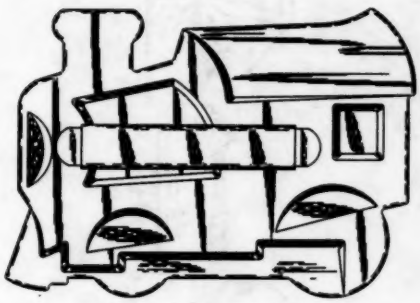
333,759
HAMBURGER PRESS
Kenneth M. Ferris, Gracy La., East Hampton, N.Y. 11937
Filed Feb. 11, 1991, Ser. No. 654,366
Term of patent 14 years
U.S. Cl. D7—672



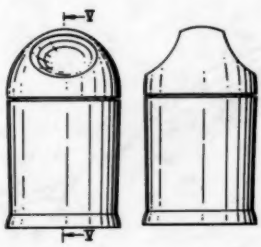
333,760
COMBINED TOP PIE CRUST SEALER AND TRIMMER
Robert D. Walker, 125 E. Guadalupe #148, Gilbert, Ariz. 85234
Filed Jul. 18, 1991, Ser. No. 731,938
Term of patent 14 years
U.S. Cl. D7—672



333,761
PANCAKE MOLD
Jenny Dicochea, 36442 Road 172, Visalia, Calif. 93291
Filed Aug. 19, 1991, Ser. No. 746,562
Term of patent 14 years
U.S. Cl. D7—675



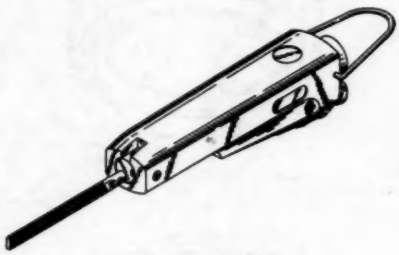
333,762
CHEESE GRATER
Bruno Herren, Berne, Switzerland, assignor to Moha Moderne Haushaltwaren A.G., Zollikofen, Switzerland
Filed Jul. 22, 1991, Ser. No. 733,409
Claims priority, application United Kingdom, Feb. 20, 1991, 2013169
Term of patent 14 years
U.S. Cl. D7—678



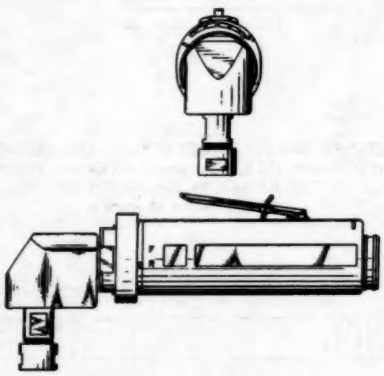
333,763
PLANT WATERER
Rita Collins, 2462 N. Nye #131, Fremont, Nebr. 68025
Filed Feb. 12, 1991, Ser. No. 654,555
Term of patent 14 years
U.S. Cl. D8—1

333,764
COMBINED SCISSORS AND COMB
dp Moi Psva, Via Carlo Grassi 47, 10078 Venaria Reale (Torino), Italy
Filed Oct. 18, 1990, Ser. No. 599,788
Claims priority, application Italy, Apr. 20, 1990, 52981 B/90
Term of patent 14 years
U.S. Cl. D8—57

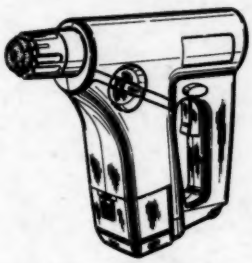
333,765
PORTABLE RECIPROCATING FILE
Osamu Tamanaha, Tokyo, Japan, assignor to Nitto Kohki Co., Ltd., Tokyo, Japan
Filed Dec. 26, 1990, Ser. No. 634,073
Term of patent 14 years
U.S. Cl. D8—61



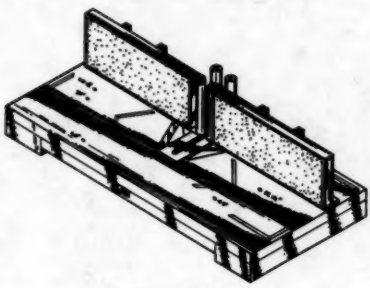
333,766
ANGLED PNEUMATIC GRINDER
Gregory P. Albert, Waverly, N.Y.; Kenneth J. Dubugue, Shesequinth, Pa.; Bruce D. Fay, Sayre, Pa., and duane S. Gable, Ulster, Pa., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Filed Oct. 11, 1990, Ser. No. 595,493
Term of patent 14 years
U.S. Cl. D8—62



333,767
PORTABLE CORDLESS HAMMER
Yuichiro Sasaki, and Chikai Yoshimizu, both of Katsuta, Japan, assignors to Hitachi Koki Company, Limited, Tokyo, Japan
Filed Oct. 19, 1990, Ser. No. 600,354
Claims priority, application Japan, Feb. 23, 1990, 2-5840
Term of patent 14 years
U.S. Cl. D8—69

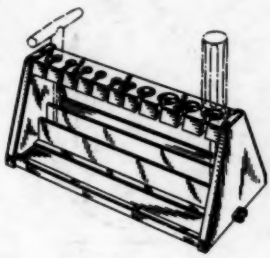


333,768
MITRE SAW GUIDE
Gary Schulenberg, 421 Woodrow Ave., Dunkirk, N.Y. 14048
Filed Apr. 4, 1990, Ser. No. 504,984
Term of patent 14 years
U.S. Cl. D8—71

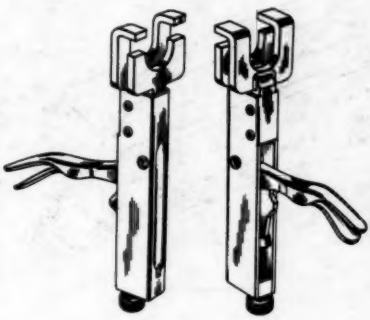


333,769
HEX KEY HOLDER
Mitchell Jureckson, Lancaster, Pa., assignor to SPS Technologies, Inc., Newtown, Pa.
Filed Oct. 15, 1991, Ser. No. 775,380
Term of patent 14 years
U.S. Cl. D8—71

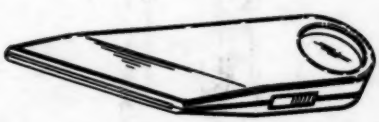
333,770
HEX KEY HOLDER
Mitchell Jureckson, Lancaster, Pa., assignor to SPS Technologies, Inc., Newtown, Pa.
Filed Oct. 15, 1991, Ser. No. 775,379
Term of patent 14 years
U.S. Cl. D8—71



333,771
CLAMP
Nobuyuki Aoki, Tokyo, Japan, assignor to Koto Sangyo Co., Ltd., Tokyo, Japan
Filed Jan. 10, 1991, Ser. No. 641,120
Term of patent 14 years
U.S. Cl. D8—72

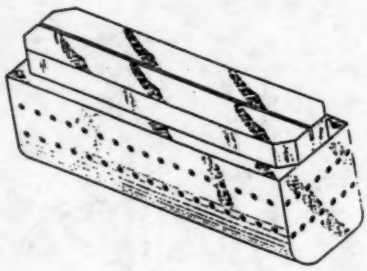


333,772
LETTER OPENER
Odo H. Klose, Wuppertal, Fed. Rep. of Germany, assignor to Präsenta KG, Weber & Co., Solingen, Fed. Rep. of Germany
Filed May 4, 1987, Ser. No. 446,412
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1986, 5MR9723
Term of patent 14 years
U.S. Cl. D8—102



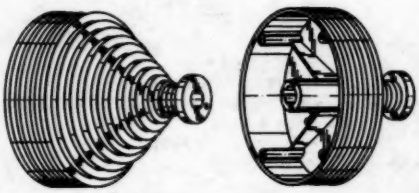
333,773
LETTER OPENER
Samuel H. Schapiro, Jr., Lexington, Ky., assignor to Blue Ribbon Pen & Pencil Co., Inc., Georgetown, Ky.
Filed Jul. 23, 1990, Ser. No. 556,215
Term of patent 14 years
U.S. Cl. D8—102

333,774
HANDLE FOR A KNIFE BLADE
Steven C. Bisch, 119 W. 8th Ave., Conshohocken, Pa. 19428
Filed Aug. 30, 1990, Ser. No. 574,944
Term of patent 14 years
U.S. Cl. D8—107

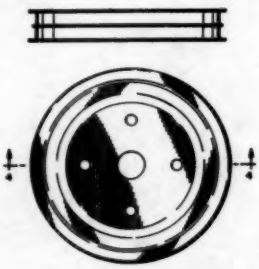


333,775
FLEXIBLE DRAW LATCH
Paul E. Krape, Westtown, Pa., assignor to Southco, Inc., Westtown Chester County, Pa.
Filed Feb. 20, 1991, Ser. No. 658,357
Term of patent 14 years
U.S. Cl. D8—342

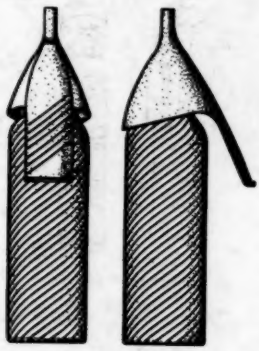
333,776
WINDING DRUM
Hermel R. Cloutier, Brrodie Drive Concession 6, R.R. #4, Orillia, Ontario, Canada L3V 6H4
Filed Jun. 20, 1991, Ser. No. 718,118
Claims priority, application Canada, Dec. 20, 1990, 20-12-90-1
Term of patent 14 years
U.S. Cl. D8—358



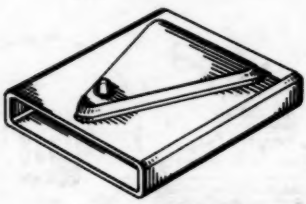
333,777
PULLEY
Toshiaki Kanemitsu, Kobe, and Kazuyuki Oda, Hyogo, both of Japan, assignors to Kabushiki Kaisha Kanemitsu, Japan
Filed May 29, 1991, Ser. No. 706,732
Claims priority, application Japan, Dec. 12, 1990, 2-41699; Dec. 12, 1990, 2-41700
Term of patent 14 years
U.S. Cl. D8—360



333,778
DISPENSER
Iris Magidson, New York, N.Y.; Thomas F. Wiegner, Norwalk, and Joseph Pereira, West Redding, both of Conn., assignors to Clairol, Inc., New York, N.Y.
Filed Mar. 11, 1991, Ser. No. 667,094
Term of patent 14 years
U.S. Cl. D9—300



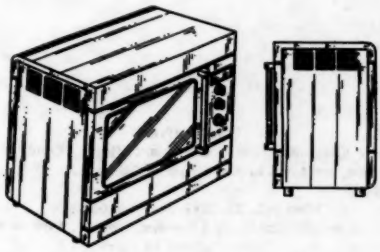
333,779
DIRECTIONAL INDICATING CLAMP FOR FIRE HOSES
Clifford Clement, 193 High St., Somerset, Mass. 02726
Filed May 2, 1991, Ser. No. 695,032
Term of patent 14 years
U.S. Cl. D8—395



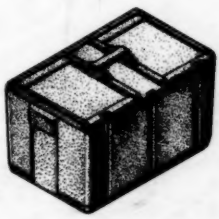
333,780
ROLL-ON APPLICATOR
John S. Jones, Eggertsville, N.Y., and Serge Desjardin, Cateau Dulac, Canada, assignors to FWJ Plastic Packaging, Inc., Tonawanda, N.Y.
Filed Mar. 13, 1991, Ser. No. 668,471
Term of patent 14 years
U.S. Cl. D9—338

333,781
DISPENSING CARTON
Carolyn B. Kobel, Hamburg, N.Y., assignor to Bristol-Myers Squibb Company, New York, N.Y.
Filed Mar. 28, 1991, Ser. No. 676,237
Term of patent 14 years
U.S. Cl. D9—339

333,782
OVEN
Adrianus A. J. van Berlo, Eindhoven, Netherlands, assignor to Fri-Jado B.V., Netherlands
Filed Feb. 21, 1991, Ser. No. 659,188
Claims priority, application Int'l Pat. Institute, Aug. 23, 1990, DM/017453
Term of patent 14 years
U.S. Cl. D7—350

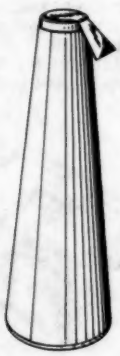


333,783
SHIPMENT CONTAINER
Frank Perugini, Aurora, Ill., assignor to Chemical Waste Management, Inc., Oak Brook, Ill.
Filed Feb. 11, 1991, Ser. No. 653,124
Term of patent 14 years
U.S. Cl. D9—424

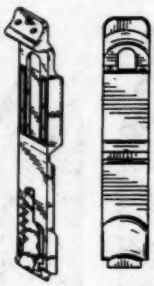


333,784
CONTAINER
Rudolph A. Goodman, 222 E. Alma, Sherman, Tex. 75090
Filed Mar. 19, 1991, Ser. No. 672,588
Term of patent 14 years
U.S. Cl. D9—424

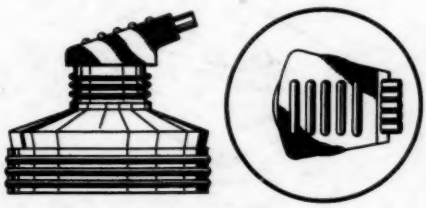
333,785
CONTAINER
Ingemar Ohlsson, Malmo, and Bengt Bjorck, Lund, both of Sweden, assignors to Tetra Alfa Holdings S.A., Pully, Switzerland
Filed Feb. 27, 1991, Ser. No. 661,318
Claims priority, application Sweden, Aug. 27, 1990, 901778
Term of patent 14 years
U.S. Cl. D9—431



333,786
CLIP FOR BAGS
Michael H. Carroll, 2210 Wilshire Blvd., #550, Santa Monica, Calif. 90403
Filed Aug. 30, 1991, Ser. No. 752,335
Term of patent 14 years
U.S. Cl. D9—435

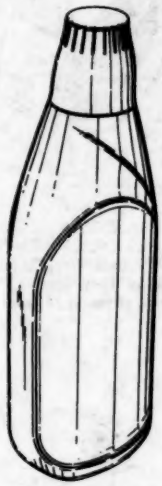


333,787
DISPENSER FOR A CONTAINER
Kenneth W. Hirst, New York, and John R. Petersen, Brooklyn, both of N.Y., assignors to The Gillette Company, Boston, Mass.
Filed Jan. 11, 1991, Ser. No. 639,958
Term of patent 14 years
U.S. Cl. D9—448



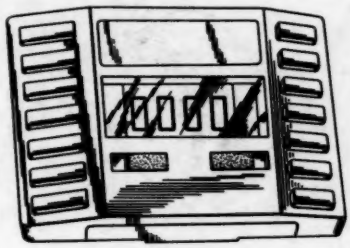
333,788
DISPENSER CAP
Robert C. Geschwender, 3855 Orchard St., Lincoln, Nebr. 68503
Filed Dec. 26, 1990, Ser. No. 634,338
Term of patent 14 years
U.S. Cl. D9—448

333,789
COMBINED BOTTLE AND CAP
Ulrich Reif, Dusseldorf, Fed. Rep. of Germany, assignor to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.
Filed Nov. 26, 1991, Ser. No. 798,688
Claims priority, application United Kingdom, May 31, 1991, 2015040
Term of patent 14 years
U.S. Cl. D9—563

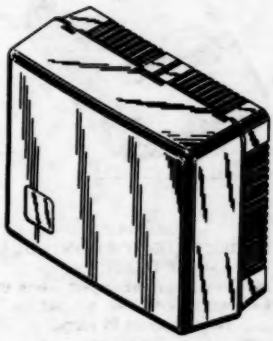


333,790
CLOCK
Timothy F. Cunningham, Spokane, Wash., assignor to B. Sirius Toys, Inc., Millville, N.J.
Filed May 3, 1990, Ser. No. 518,194
Term of patent 14 years
U.S. Cl. D10—2

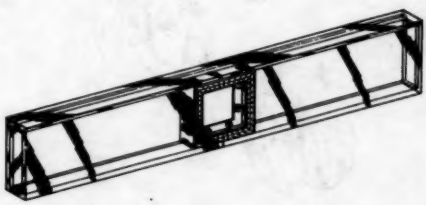
333,791
ELECTRIC CLOCK CASE
Stephen A. Glick, Charlestown, R.I., and E. Hubbard Yonkers, Contoocook, N.H., assignors to New England Yacht Consultants, Ltd., Charlestown, R.I.
Filed Jul. 3, 1990, Ser. No. 547,582
Term of patent 14 years
U.S. Cl. D10—15



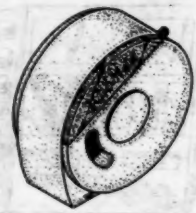
333,792
THERMOSTAT HOUSING
James A. Odom, Jr., Apple Valley, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed May 29, 1990, Ser. No. 530,942
Term of patent 14 years
U.S. Cl. D10—50



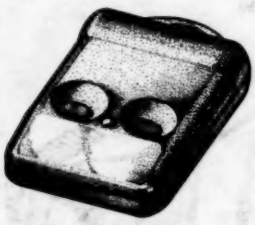
333,793
LEVEL
Jerry D. Pratt, 9333 Loma Vista Dr., Dallas, Tex. 75243
Filed Nov. 13, 1990, Ser. No. 614,648
Term of patent 14 years
U.S. Cl. D10—69



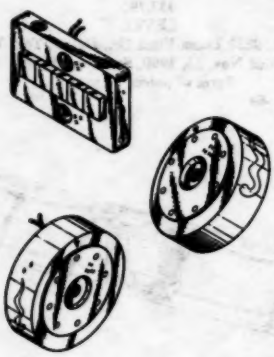
333,794
COATING THICKNESS TESTER
Motohiko Emori, Tokyo, Japan, assignor to Kett Electric Laboratory, Tokyo, Japan
Filed Jun. 7, 1990, Ser. No. 534,417
Claims priority, application Japan, Feb. 28, 1990, 2-6153
Term of patent 14 years
U.S. Cl. D10—70



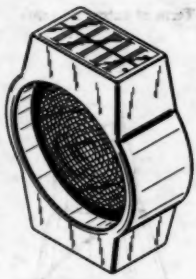
333,795
TRANSMITTER FOR A VEHICLE ALARM
Darrell E. Issa, 1598 Parkview Dr., Vista, Calif. 92083
Filed Dec. 12, 1991, Ser. No. 805,920
Term of patent 14 years
U.S. Cl. D10—106



333,796
COMBINED SMOKE DETECTOR CONTROL UNIT AND SMOKE DETECTOR
Paul Bannon, 145 Crow La., Newburyport, Mass. 01950
Filed Jun. 21, 1990, Ser. No. 541,360
Term of patent 14 years
U.S. Cl. D10—106



333,797
SOLAR POWERED CONSTRUCTION LIGHT
Tseng Lu, 675 N. Rodeo Way, Walnut, Calif. 91789
Filed Mar. 12, 1991, Ser. No. 668,441
Term of patent 14 years
U.S. Cl. D10—114



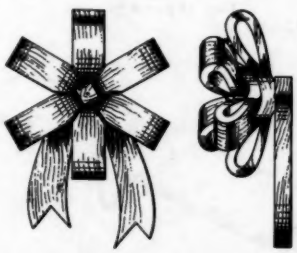
333,798
VEHICLE CLEARANCE WARNING SIGNAL
James J. Gaston, 5214 Sirbuck Way, Carmichael, Calif. 95608
Filed Aug. 19, 1991, Ser. No. 746,579
Term of patent 14 years
U.S. Cl. D10—114

333,799
TIMEPIECE DIAL
Philippe Charriol, 66 Black's Link, Hong Kong, Hong Kong
Filed Aug. 23, 1990, Ser. No. 572,182
Claims priority, application World Int. Prop. O., Mar. 15, 1990, DM/016175
Term of patent 14 years
U.S. Cl. D10—126

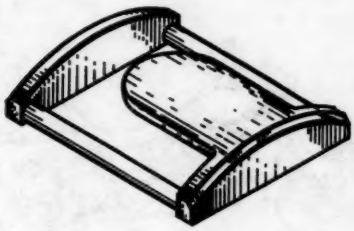
333,800
ORNAMENTAL CHAIN
Matthew Akdemir, 465 Washington Ave., Cliffside Park, N.J. 07010
Filed Dec. 31, 1990, Ser. No. 636,390
Term of patent 14 years
U.S. Cl. D11—12

333,801
COMBINED BLANK FOR A DECORATION RIBBON AND STRING
Eiji Asano, 5-28, Nijigahama, Hiratsuka-shi, Kanagawa-ken, and Yoshiko Iwaki, 2-8-17-302, Minami Kugahara, Oota-ku, Tokyo, both of Japan
Division of Ser. No. 480,199, Feb. 14, 1990. This application Jun. 23, 1992, Ser. No. 903,215
Claims priority, application Japan, Aug. 15, 1989, 1-29832; Aug. 15, 1989, 1-29833; Aug. 15, 1989, 1-29834
Term of patent 14 years
U.S. Cl. D11—184

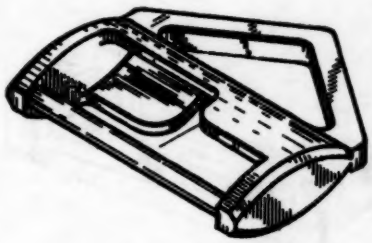
333,802
BOW-LIKE ORNAMENT
John D. Stabler, Rte. 1, Box 204F, Thomasville, Ala. 36784
Filed Mar. 13, 1991, Ser. No. 669,303
Term of patent 14 years
U.S. Cl. D11—184



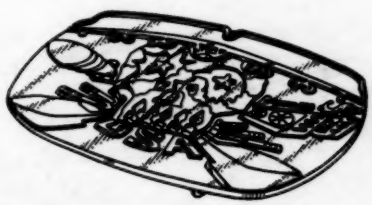
333,803
BUCKLE
Dana Franklin, Denver, Colo., assignor to Samsonite Corporation, Denver, Colo.
Filed Mar. 15, 1991, Ser. No. 670,206
Term of patent 14 years
U.S. Cl. D11—218



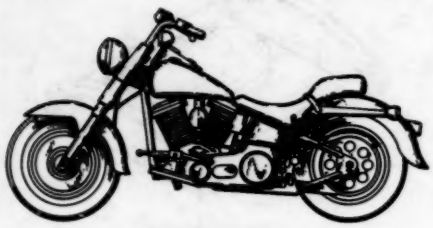
333,804
BUCKLE
Dana Franklin, Denver, Colo., assignor to Samsonite Corporation, Denver, Colo.
Filed Mar. 15, 1991, Ser. No. 670,149
Term of patent 14 years
U.S. Cl. D11—218



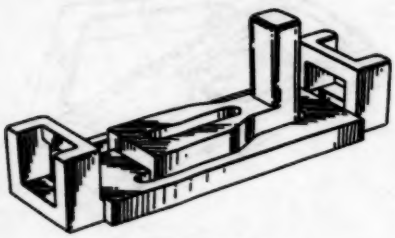
333,805
BELT BUCKLE
S. David Hogan, 4657 S. 3250 West, Salt Lake City, Utah 84119
Filed May 13, 1991, Ser. No. 699,222
Term of patent 14 years
U.S. Cl. D11—232



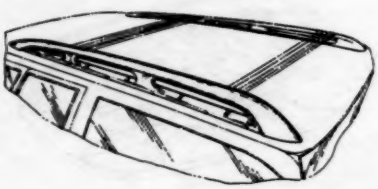
333,806
MOTORCYCLE
William G. Davidson, Elm Grove, Wis., assignor to Harley-Davidson, Inc., Milwaukee, Wis.
Filed May 31, 1990, Ser. No. 532,078
Term of patent 14 years
U.S. Cl. D12—110



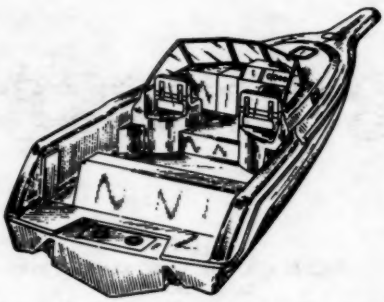
333,807
PIN LATCH FOR A WINDSHIELD WIPER
Cedric S. K. Charng, 3 F-1, No. 5, Lane, 56, Wan An Street, Moogar, Taipei City, Taiwan
Filed Nov. 6, 1991, Ser. No. 788,711
Term of patent 14 years
U.S. Cl. D12—155



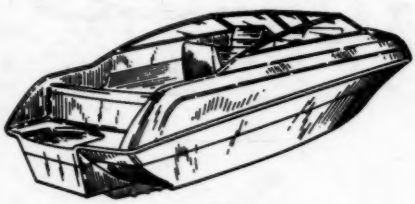
333,808
VEHICLE LUGGAGE CARRIER SIDE RAIL
John S. Cucheran, Lake Orion, Mich., assignor to John A. Bott, Grosse Pointe Farms, Mich.
Filed Apr. 19, 1991, Ser. No. 687,541
Term of patent 14 years
U.S. Cl. D12—157



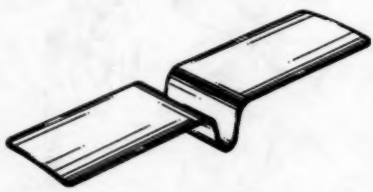
333,809
RECREATION BOAT
Augusto Villalon, and Wolfgang Schneider, both of Cape Coral, Fla., assignors to Outboard Marine Corporation, Waukegan, Ill.
Filed May 15, 1991, Ser. No. 702,194
Term of patent 14 years
U.S. Cl. D12—313



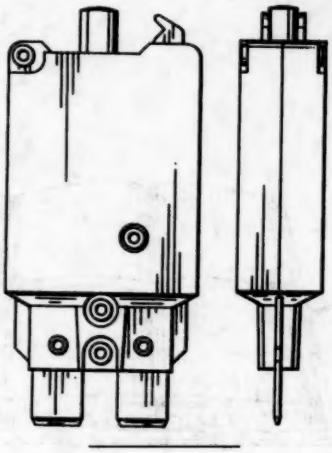
333,810
RECREATIONAL BOAT
Thomas Wenstadt, Cadillac, Mich., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed May 7, 1991, Ser. No. 699,804
Term of patent 14 years
U.S. Cl. D12—314



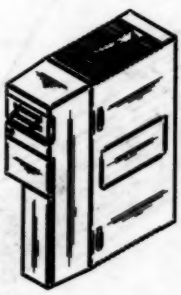
333,811
CATAMARAN HYDROFOIL
Robert W. Doughty, P.O. Box 1655, Casa Grande, Ariz. 85222
Filed Aug. 12, 1991, Ser. No. 744,013
Term of patent 14 years
U.S. Cl. D12—317



333,812
CIRCUIT BREAKER
Fritz Krasser, Altdorf, Fed. Rep. of Germany, assignor to Ellenberger & Poensgen GmbH, Altdorf, Fed. Rep. of Germany
Filed Mar. 4, 1991, Ser. No. 663,634
Term of patent 14 years
U.S. Cl. D13—160



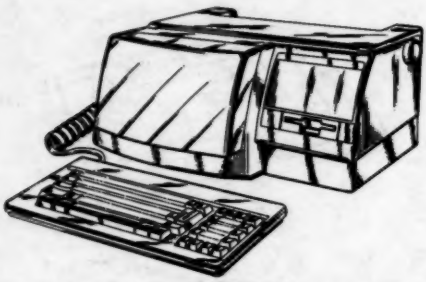
333,813
POWER UNIT OF SEQUENCE CONTROLLER
Katsuhiro Ishida, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Mar. 8, 1990, Ser. No. 490,978
Claims priority, application Japan, Sep. 13, 1989, 1-33564
The portion of the term of this patent subsequent to Sep. 29, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D13—162



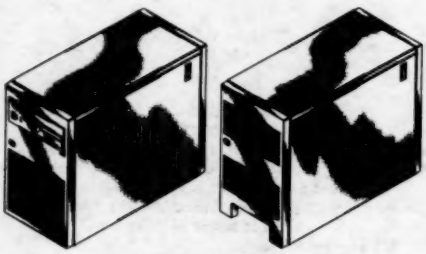
333,814
COMBINED ELECTRONIC DRAWING STYLUS AND TABLET HOUSING
Lanette O. Swanson, Buffalo Grove, Ill., and Albert Y. Chung Cheung, Hong Kong, Hong Kong, assignors to Video Technology Industries, Inc., Wheeling, Ill.
Filed Oct. 30, 1990, Ser. No. 607,051
Term of patent 14 years
U.S. Cl. D14—100

333,815
COMPUTER
Kanji Mizusugi; Kensho Tsuji, and Fumikazu Shimanuki, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Sep. 18, 1990, Ser. No. 584,186
Claims priority, application Japan, Mar. 20, 1990, 2-9335
Term of patent 14 years
U.S. Cl. D14—106

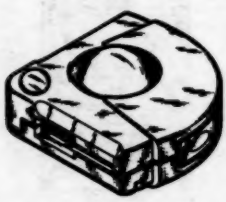
333,816
WORD PROCESSOR
Gregory W. Smiley, Cortland, N.Y., assignor to Smith Corona Corporation, Cortland, N.Y.
Filed Apr. 3, 1991, Ser. No. 679,860
Term of patent 14 years
U.S. Cl. D14—106



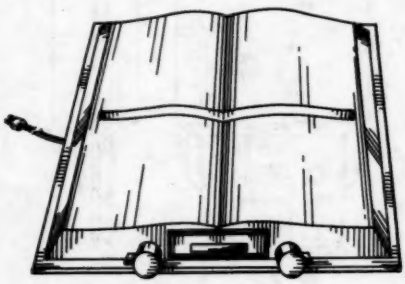
333,817
OPTICAL CARTRIDGE LIBRARY
Martin J. Marotti, Tucson, Ariz., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 31, 1990, Ser. No. 606,782
Term of patent 14 years
U.S. Cl. D14—109



333,818
TRACK BALL
Tso S. Yang, 11Fl., No. 116, Sec. 2, Nanking E. Rd., Taipei, Taiwan
Filed Aug. 2, 1991, Ser. No. 740,015
Term of patent 14 years
U.S. Cl. D14—114

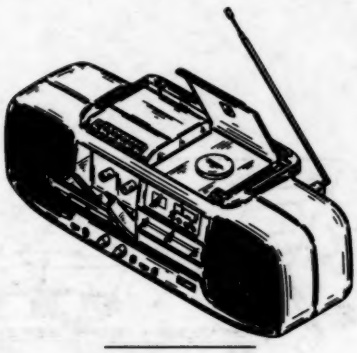


333,819
COMBINED CASSETTE PLAYER AND STAND FOR A FRAMED PICTURE
James C. Toney, 5636 Hamlet Ave., Cleveland, Ohio 44127
Continuation-in-part of Ser. No. 269,542, Nov. 10, 1988, abandoned. This application Dec. 28, 1990, Ser. No. 635,323
Term of patent 14 years
U.S. Cl. D14—162

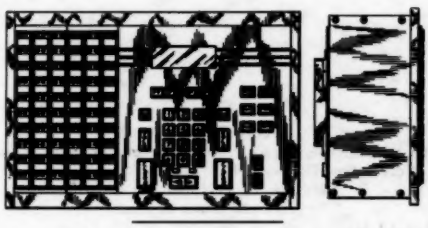


333,820
COMBINED RADIO TUNER AND TAPE RECORDER
Mitsutaka Fuke, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Nov. 13, 1990, Ser. No. 612,714
Claims priority, application Japan, May 16, 1990, 2-16563
Term of patent 14 years
U.S. Cl. D14—163

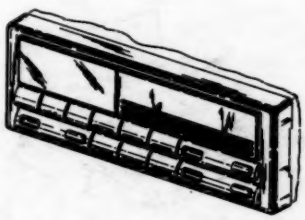
333,821
COMBINED DIGITAL AUDIO DISC PLAYER, RADIO TUNER AND TAPE RECORDER
Makoto Takimoto, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Nov. 13, 1990, Ser. No. 612,713
Claims priority, application Japan, May 16, 1990, 2-16566
Term of patent 14 years
U.S. Cl. D14—168



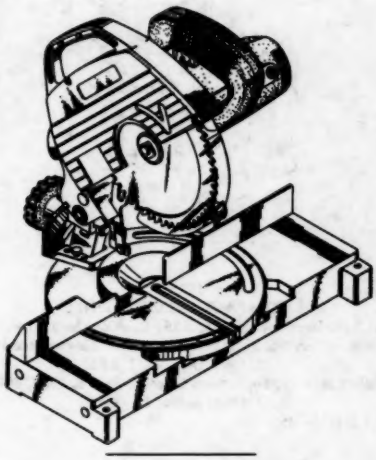
333,822
TELEPHONE CONSOLE
Tom Hughes, Newtown, and Neil A. Roth, Stamford, both of Conn., assignors to V Band Corporation, Elmsford, N.Y.
Filed Jul. 20, 1990, Ser. No. 556,198
Term of patent 14 years
U.S. Cl. D14—241



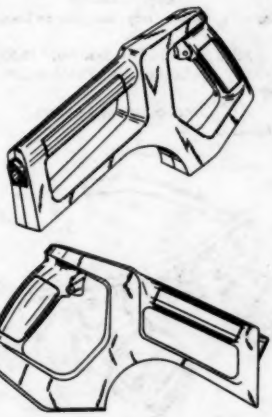
333,823
FRONT CONTROL PANEL FOR A COMBINED AUTOMOTIVE RADIO AND CASSETTE PLAYER
Stephen B. Sliper, Woodhaven; Walter A. Danilowicz, Livonia, and Soo Y. Kang, Inkster, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Jan. 22, 1991, Ser. No. 648,425
Term of patent 14 years
U.S. Cl. D14—258



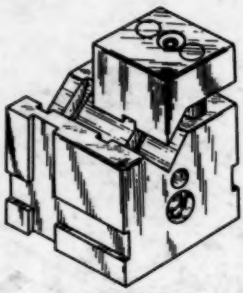
333,824
MITER SAW
Yasuo Suzuki, Nishio, and Giniehi Hirota, Nagoya, both of Japan, assignors to Makita Electric Works, Ltd., Anjo, Japan
Filed Jan. 29, 1991, Ser. No. 647,010
Claims priority, application Japan, Aug. 3, 1990, 2-26440
Term of patent 14 years
U.S. Cl. D15—133



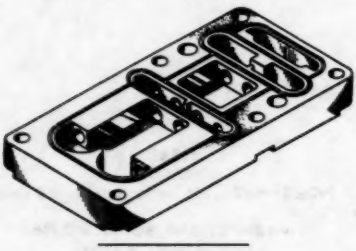
333,825
HANDLE
Scott D. Price, Pylesville, Md., assignor to Black & Decker Inc., Newark, Del.
Filed Jun. 27, 1989, Ser. No. 372,784
Term of patent 14 years
U.S. Cl. D15—142



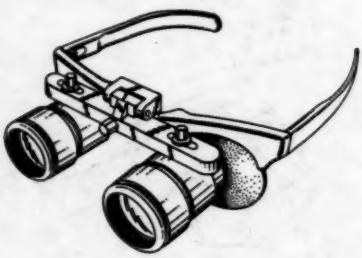
333,826
MACHINISTS V-BLOCK
Joseph A. Giangrasso, 11221 Elvesa St., Oakland, Calif. 94605
Filed Jul. 11, 1991, Ser. No. 728,948
Term of patent 14 years
U.S. Cl. D15—145



333,827
COMPACT EJECTOR UNIT
Peter Tell, Brevikavägen 27, S-184 00 Åkersberga, Sweden
Division of Ser. No. 280,537, Dec. 6, 1988. This application Oct. 21, 1991, Ser. No. 779,853
Claims priority, application Sweden, Jun. 8, 1988, 88-1421
Term of patent 14 years
U.S. Cl. D15—199

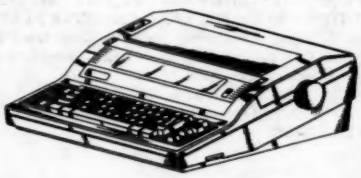


333,828
BINOCULAR
Fabio Baldassarre, Rome, Italy, assignor to Balda's Snc, Rome, Italy
Filed Sep. 6, 1990, Ser. No. 578,991
Claims priority, application Int'l Pat. Institute, Mar. 6, 1990, DM/016090
Term of patent 14 years
U.S. Cl. D16—133



333,829
COVER FOR AN OVERHEAD PROJECTOR
James E. Nash, and Dennis J. Roden, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Oct. 18, 1990, Ser. No. 600,215
Term of patent 14 years
U.S. Cl. D16—235

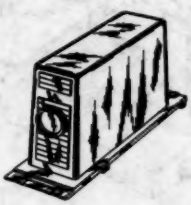
333,830
WORD PROCESSOR
Mark J. Lampe, Syracuse, N.Y., assignor to Smith Corona Corporation, Cortland, N.Y.
Filed Jan. 22, 1991, Ser. No. 646,017
Term of patent 14 years
U.S. Cl. D18—1



333,831
CALCULATOR
Paul Chen, Chung Ho, Taiwan, assignor to Datel Electrocraft Corp., Taipei, Taiwan
Filed Jul. 1, 1991, Ser. No. 724,349
Term of patent 14 years
U.S. Cl. D18—7

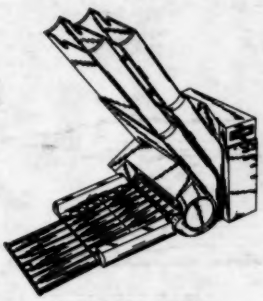
333,832
CAP FOR TONER BOTTLE
Noriyuki Suzuki, Yokohama, and Yutaka Ban, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 14, 1991, Ser. No. 744,788
Claims priority, application Japan, Feb. 19, 1991, 3-004163
Term of patent 14 years
U.S. Cl. D18—40

333,833
TONER CASE FOR COPYING MACHINE
Ei Yamamoto, Tokyo, and Akihito Kanamori, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 19, 1991, Ser. No. 732,715
Claims priority, application Japan, Jan. 31, 1991, 3-2460
Term of patent 14 years
U.S. Cl. D18—43



333,834
SORTER FOR COPYING MACHINE
Masataka Isomoto, Kawasaki, and Mitsuru Sakurai, Musashino, both of Japan, assignors to Canan Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 4, 1991, Ser. No. 770,961
Claims priority, application Japan, Apr. 19, 1991, 3-11503
Term of patent 14 years
U.S. Cl. D18—48

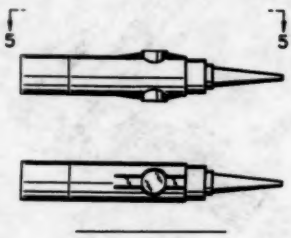
333,835
PRINTER
Ilan Israely, Westwood, and Mauricio Mirand, Lakewood, both of Calif., assignors to Star Micronics Co., Ltd., Shizuoka, Japan
Filed May 24, 1991, Ser. No. 705,153
Term of patent 14 years
U.S. Cl. D18—55



333,836
PRINTER
Louis G. Kelemen, Thousand Oaks, Calif., and James B. Pagella, Natick, Mass., assignors to Dataproducts Corporation, Woodland Hills, Calif.
Filed Oct. 30, 1990, Ser. No. 605,983
Term of patent 14 years
U.S. Cl. D18—55

333,837
PEN
Richard F. M. Peersmann, Et Scheveningen, Netherlands, assignor to Pollyflame International, B.V., Netherlands
Filed Jun. 15, 1990, Ser. No. 539,055
Claims priority, application World Int. Prop. O., Jan. 8, 1990, DM015552
Term of patent 14 years
U.S. Cl. D19—46

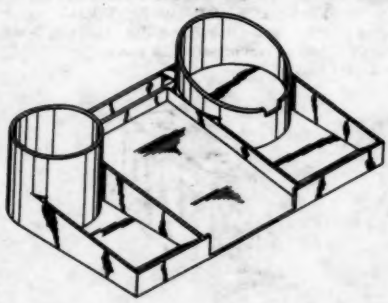
333,838
GLUE DISPENSER
Jerry Gabel, 6311 Pacemont Dr., Huntington Beach, Calif. 92648
Filed Dec. 10, 1990, Ser. No. 624,773
Term of patent 14 years
U.S. Cl. D19—66



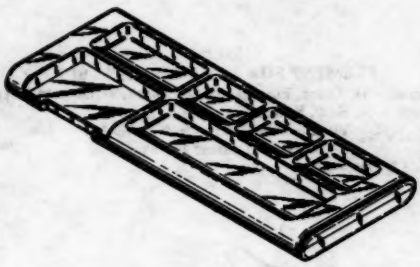
333,839
COMBINED VERTICALLY-MOUNTABLE PENCIL SHARPENER AND HOLDER
Jerrilyn C. Kiyokane, Torrance, Calif., assignor to Namkung Promotions, Inc., Costa Mesa, Calif.
Filed Nov. 16, 1990, Ser. No. 614,751
Term of patent 14 years
U.S. Cl. D19—73

333,840
COMBINED TELEPHONE INDEX AND WRITING INSTRUMENT HOLDER
Olof Hagstrand, Stockholm, Sweden, assignor to AB Underphone, Sweden
Filed Feb. 28, 1991, Ser. No. 662,791
Claims priority, application Sweden, Aug. 29, 1990, 90-1805
Term of patent 14 years
U.S. Cl. D19—76

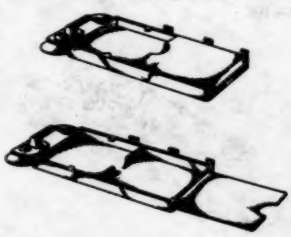
333,841
DESK ACCESSORY ORGANIZER
Douglas A. Henricksen, Boca Raton, Fla., assignor to Enginuity Inc., Boca Raton, Fla.
Filed Sep. 6, 1990, Ser. No. 578,860
Term of patent 14 years
U.S. Cl. D19—78



333,842
ORGANIZER TRAY FOR ASSORTED DESK ACCESSORIES
Balthasar Kirchner, Eferding, Austria, assignor to Ernst Stadelmann Gesellschaft M.B.H., Eferding, Austria
Filed Aug. 17, 1990, Ser. No. 569,455
Claims priority, application Austria, Feb. 22, 1990, 27.886; Feb. 22, 1990, 27.887; Feb. 22, 1990, 27.888; Feb. 22, 1990, 27.889; Feb. 22, 1990, 27.890; Feb. 22, 1990, 27.891; Feb. 22, 1990, 27.892
The portion of the term of this patent subsequent to Dec. 22, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D19—78

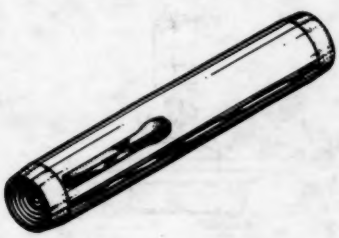


333,843
COMBINED HOLDER FOR NOTE PAPER AND A WRITING INSTRUMENT
Jerome Hartmann, Carlisle; John Schenken, and Charles A. Haas, both of Des Moines, all of Iowa, assignors to Cobbs Manufacturing Company, Des Moines, Iowa
Filed Jan. 21, 1992, Ser. No. 822,990
Term of patent 14 years
U.S. Cl. D19—78

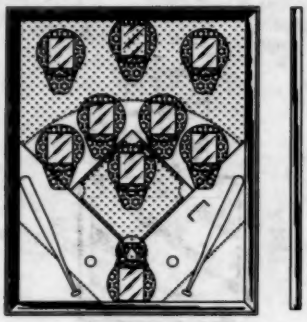


333,844
NEWSPAPER VENDING MACHINE
David V. Nichols, Springfield, Va., and Joel D. Powers, Rockvale, Tenn., assignors to Gannett Co., Inc., Arlington, Va.
Filed Feb. 7, 1991, Ser. No. 654,926
Term of patent 14 years
U.S. Cl. D20—6

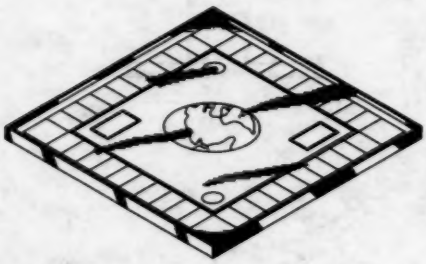
333,845
RETRACTABLE SIGN
Brian T. Kamachi, Montebello, Calif., assignor to United Commercial Trading Co., Inc., Los Angeles, Calif.
Filed Aug. 23, 1991, Ser. No. 748,901
Term of patent 14 years
U.S. Cl. D20—21



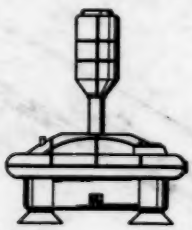
333,846
BASEBALL CARD DISPLAY BOARD
David M. Graham, 17116 Old Mill Run, Rockville, Md. 20855
Filed Jan. 28, 1991, Ser. No. 723,513
Term of patent 14 years
U.S. Cl. D20—40



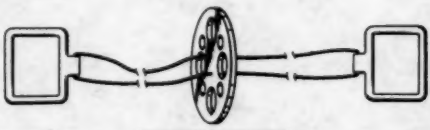
333,847
GAME BOARD
Kinsey Redding, 3065 Creel Rd., College Park, Ga. 30349
Filed Nov. 5, 1990, Ser. No. 608,898
Term of patent 14 years
U.S. Cl. D21—31



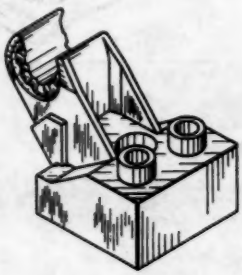
333,848
JOY STICK
Michael K. Tse, Kowloon, Hong Kong, assignor to STD Electronic International Ltd., Hong Kong, Hong Kong
Filed Jul. 22, 1991, Ser. No. 733,249
Term of patent 14 years
U.S. Cl. D21—48



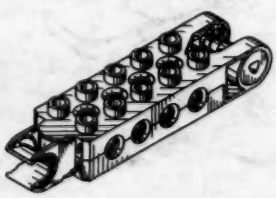
333,849
WHIRLING TOY
Jerry N. Gardner, and Clara R. Gardner, both of P.O. Box 307, Jacksonville, Fla. 32220
Filed Jan. 18, 1991, Ser. No. 643,008
Term of patent 14 years
U.S. Cl. D21—98



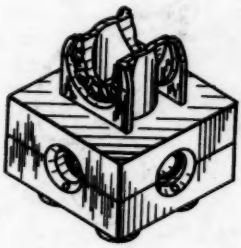
333,850
ELEMENT FOR A TOY BUILDING SET
Flemming H. Olsen, Espergaerde, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Nov. 6, 1991, Ser. No. 789,115
Term of patent 14 years
U.S. Cl. D21—108



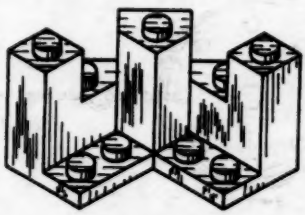
333,851
ELEMENT FOR A TOY BUILDING SET
Flemming H. Olsen, Espergaerde, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Nov. 6, 1991, Ser. No. 789,129
Term of patent 14 years
U.S. Cl. D21—108



333,852
ELEMENT FOR A TOY BUILDING SET
Flemming H. Olsen, Esperg rde, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Nov. 6, 1991, Ser. No. 789,132
Term of patent 14 years
U.S. Cl. D21—108

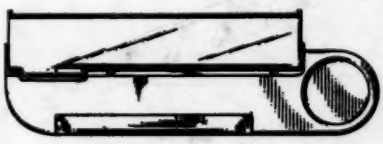


333,853
ELEMENT FOR A TOY BUILDING SET
Jens N. Knudsen, Billund, Denmark, assignor to Interlego A.G., Baar, Switzerland
Filed Nov. 6, 1991, Ser. No. 789,123
Term of patent 14 years
U.S. Cl. D21—108



333,854
TOY TIGER SHARK
Dennis Kupperman, Glenview, Ill., assignor to RB Toy Development Co., Skokie, Ill.
Filed Nov. 26, 1990, Ser. No. 617,853
Term of patent 14 years
U.S. Cl. D21—157

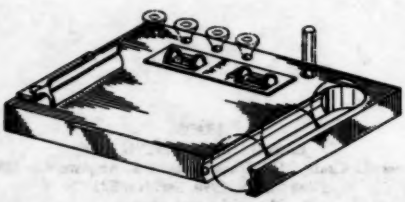
333,855
TRAY FOR AN EXERCISER
Takashi Ueda, Osaka, Japan, assignor to Cat Eye Co., Ltd., Osaka, Japan
Filed Mar. 23, 1991, Ser. No. 498,371
Claims priority, application Japan, Sep. 26, 1989, 1-35002
Term of patent 14 years
U.S. Cl. D21—194



333,856
BASEBALL PITCHING AID
Robert L. Cantey, 220 Kings Chapel Rd., Augusta, Ga. 30907
Filed May 9, 1990, Ser. No. 522,974
Term of patent 14 years
U.S. Cl. D21—200

333,857
RAKE-LIKE GOLF BALL RETRIEVER
Otto Schropp, 1503 Richardson Dr., Anchorage, Ak. 99504
Filed Aug. 7, 1990, Ser. No. 563,332
Term of patent 14 years
U.S. Cl. D21—206

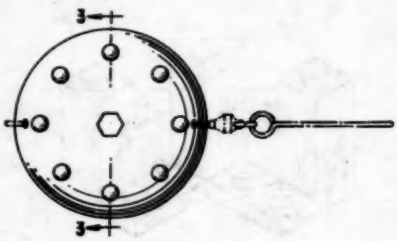
333,858
COMBINED SCORE KEEPER AND HOLDER FOR GOLF ACCESSORIES
Lawrence R. Pitz, 352 Newell St., Barberton, Ohio 44203
Filed Aug. 29, 1990, Ser. No. 574,918
Term of patent 14 years
U.S. Cl. D21—234



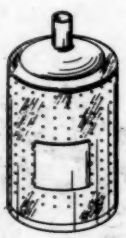
333,859
KNIFE BLADE
William E. Meyer, Dallas, Tex., assignor to The B & F System, Inc., Dallas, Tex.
Filed Jul. 2, 1990, Ser. No. 547,097
Term of patent 14 years
U.S. Cl. D22—118

333,860
FISHING JIG
Robert E. Barcus, Rte. 1, Box 273, Marcell, Minn. 56657
Filed Dec. 4, 1990, Ser. No. 621,902
Term of patent 14 years
U.S. Cl. D22—126

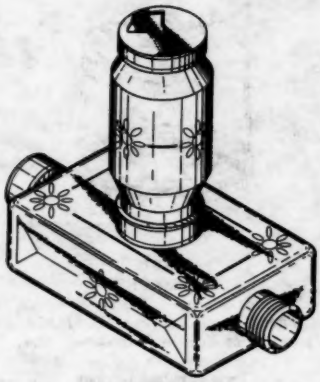
333,861
ARTIFICIAL FISH LURE
Joe A. Keranen, Hague, Va. 22469
Filed May 7, 1990, Ser. No. 519,680
Term of patent 14 years
U.S. Cl. D22—129



333,862
ILLUMINATED LIVE BAIT CONTAINER
Rick Merechka, 1115 Belmar Cir., Woodward, Okla. 73801
Filed Jul. 2, 1990, Ser. No. 546,798
Term of patent 14 years
U.S. Cl. D22—136

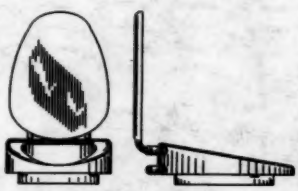


333,863
CHEMICAL MIXING CONTAINER FOR SPRINKLERS
Tonnie Kimmons, 2111 W. 68th Pl., Chicago, Ill. 60636
Filed Dec. 20, 1990, Ser. No. 630,956
Term of patent 14 years
U.S. Cl. D23—214

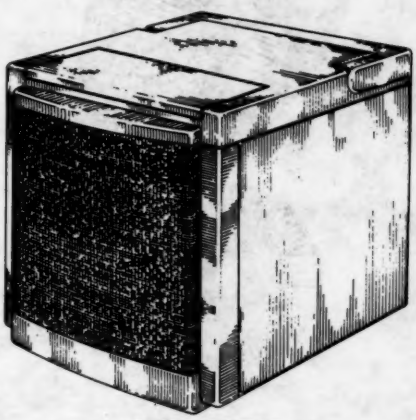


333,864
WATER CONTROL UNIT FOR A HAND SHOWER
Philippe Chretien, Dietlikon, Switzerland, assignor to KWC AG, Unterkulm, Switzerland
Filed Oct. 9, 1990, Ser. No. 594,208
Claims priority, application Switzerland, Apr. 9, 1990, DM/016382
Term of patent 14 years
U.S. Cl. D23—238

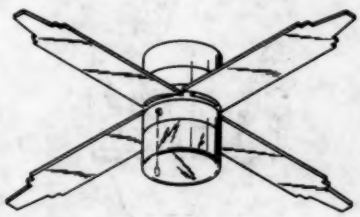
333,865
COMBINED TOILET SEAT FOR THE PHYSICALLY IMPAIRED AND TOILET SEAT COVER
James P. D'Aquila, 9 Turner Ave., Riverside, R.I. 02915
Filed Mar. 29, 1990, Ser. No. 501,191
Term of patent 14 years
U.S. Cl. D23—311



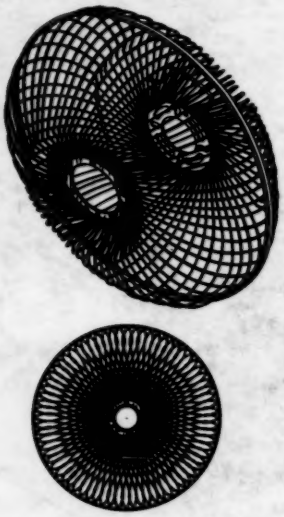
333,866
HEATER FAN
Jui-Shang Wang, Taipei, Taiwan, assignor to Duracraft Corp., Sudbury, Mass.
Filed Dec. 26, 1991, Ser. No. 814,014
Term of patent 14 years
U.S. Cl. D23—335



333,867
COMBINED ELECTRIC CEILING FAN AND LIGHT
Michael A. Markwardt, Fort Worth, Tex., assignor to Encon Industries, Inc., Fort Worth, Tex.
Filed Jun. 8, 1992, Ser. No. 894,996
Term of patent 14 years
U.S. Cl. D23—377



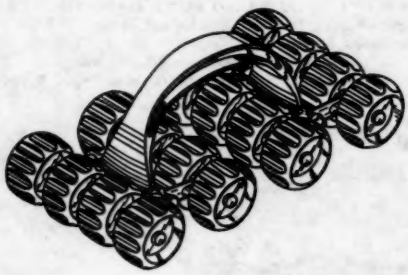
333,868
PROTECTIVE NET FOR ELECTRIC FANS
Mao-Lin Yaung, No. 83, Lane 159 An-Ho Rd. Sec 1, Tainan, Taiwan
Filed Jul. 1, 1991, Ser. No. 725,821
Term of patent 14 years
U.S. Cl. D23—412



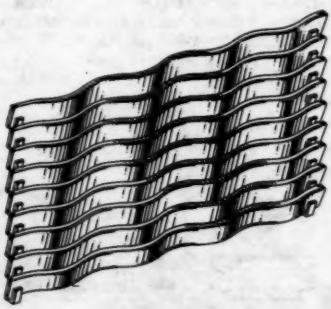
333,869
COMBINED STERILIZING CONTAINER AND STRAINER INSERTS
Stanley L. Wachman, Cherry Hill, N.J., assignor to Cetylite Industries, Inc., Pennsauken, N.J.
Filed Jun. 4, 1990, Ser. No. 532,495
Term of patent 14 years
U.S. Cl. D24—117

333,870
VACUUM CHAMBER FOR HOUSING A BLOOD BAG
John R. Wells, 4372 Keystone Ave., Culver City, Calif. 90232
Filed Aug. 27, 1990, Ser. No. 572,366
Term of patent 14 years
U.S. Cl. D24—169

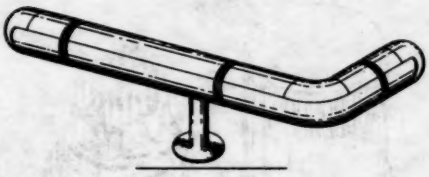
333,871
MASSAGER
Zlatko Grenko, Vere Bratonja 5, YU-51000 Rijeka, Yugoslavia
Filed Sep. 10, 1990, Ser. No. 579,493
Claims priority, application Yugoslavia, Mar. 27, 1990, M229/90
Term of patent 14 years
U.S. Cl. D24—211



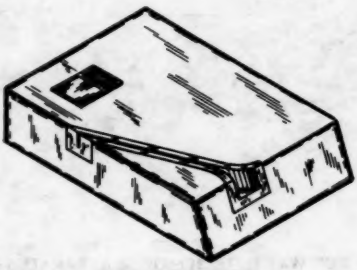
333,872
JALOUSIE SHUTTER
John Fennelly, 13132 N. 22nd Ave., Phoenix, Ariz. 85029, and Nancy Kitchell, 7522 E. MacDonald Dr., Scottsdale, Ariz. 85253
Filed Oct. 22, 1991, Ser. No. 781,934
Term of patent 14 years
U.S. Cl. D25—47



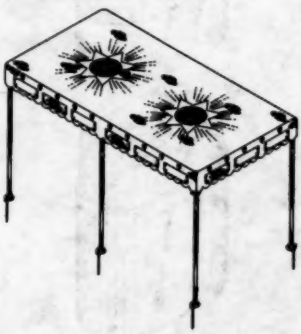
333,873
PROTECTIVE BASE RAIL
David S. McCue, Marblehead, Mass., assignor to McCue Corporation, Salem, Mass.
Filed Jan. 18, 1990, Ser. No. 466,745
Term of patent 14 years
U.S. Cl. D25—38



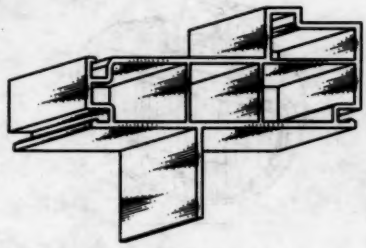
333,874
TURNSTILE COVER
Norman Diamond, Deerfield, Ill., assignor to General Signal Corporation, Stamford, Conn.
Filed Aug. 22, 1990, Ser. No. 570,714
Term of patent 14 years
U.S. Cl. D25—51



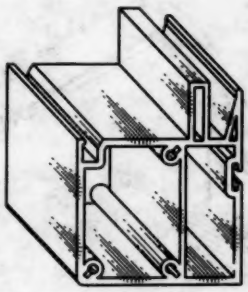
333,875
CANOPY
Bruce E. Jones, and Roland H. Jones, Sr., both of P.O. Box 315, Wallace, N.C. 28466
Filed Apr. 9, 1991, Ser. No. 682,221
Term of patent 14 years
U.S. Cl. D25—56



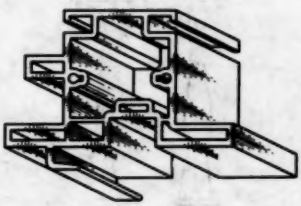
333,876
WINDOW COMPONENT EXTRUSION
Douglas L. Cole, Seattle, Wash., assignor to Mikron Industries, Kent, Wash.
Filed Mar. 20, 1991, Ser. No. 673,211
Term of patent 14 years
U.S. Cl. D25—124



333,877
WINDOW COMPONENT EXTRUSION
Douglas L. Cole, Seattle, Wash., assignor to Mikron Industries, Kent, Wash.
Filed Mar. 20, 1991, Ser. No. 673,100
Term of patent 14 years
U.S. Cl. D25—124

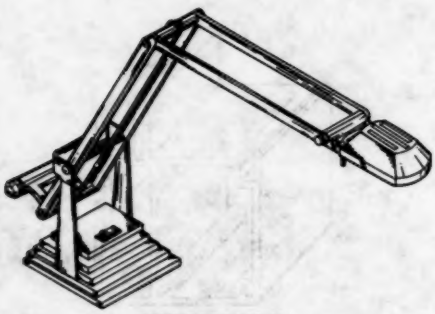


333,878
WINDOW COMPONENT EXTRUSION
Douglas L. Cole, Seattle, Wash., assignor to Mikron Industries, Kent, Wash.
Filed Mar. 20, 1991, Ser. No. 673,091
Term of patent 14 years
U.S. Cl. D25—124

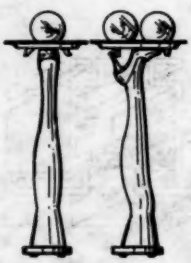


333,879
FOG LIGHT
Vincent Tsai, No. 138, Huan Ho Rd., Pan Chiao, Taiwan
Filed Oct. 24, 1990, Ser. No. 602,870
Term of patent 14 years
U.S. Cl. D26—28

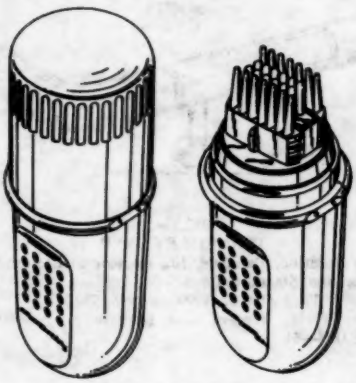
333,880
ADJUSTABLE LAMP
Soddy Huang, No. 6, Alley 9, Lane 77, Hsien Hsing St., Shulin, Taipei Hsien, Taiwan
Filed May 14, 1991, Ser. No. 699,552
Term of patent 14 years
U.S. Cl. D26—65



333,881
NOVELTY TABLE LAMP
Roy Sigman, 127 Sunset Hollow Rd., West Chester, Pa. 19380
Filed Sep. 24, 1990, Ser. No. 586,738
Term of patent 14 years
U.S. Cl. D26—99

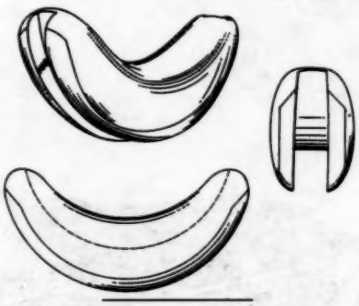


333,882
COMBINED COSMETIC APPLICATOR AND CAP
Katsuhiko Yazaki, Urawa, Japan, assignor to Mitsubishi Pencil Co., Ltd., Tokyo, Japan
Filed Mar. 8, 1991, Ser. No. 666,406
Claims priority, application Japan, Sep. 17, 1990, 2-31187
Term of patent 14 years
U.S. Cl. D28—7

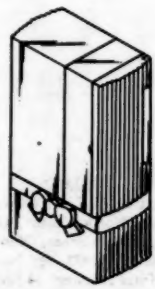


333,883
HOT WAX HAIR REMOVER APPARATUS
Samuel J. Mann, Fair Lawn, N.J., assignor to Inverness Corporation, Fair Lawn, N.J.
Filed Jun. 1, 1990, Ser. No. 531,809
Term of patent 14 years
U.S. Cl. D28—10

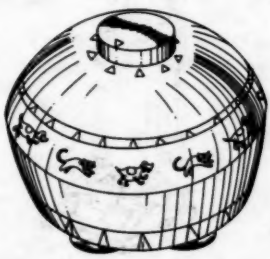
333,884
NECK SUPPORT CUSHION FOR A SHAMPOO BASIN
Anthony W. Colett, 1555 Shore Club Dr., St. Clair Shores, Mich. 48080
Filed Dec. 10, 1990, Ser. No. 632,737
Term of patent 14 years
U.S. Cl. D28—20



333,885
COSMETIC CASE
Chen T. Laing, P.O. Box 82-144, Taipei, Taiwan
Filed Jul. 22, 1991, Ser. No. 734,315
Term of patent 14 years
U.S. Cl. D28—76



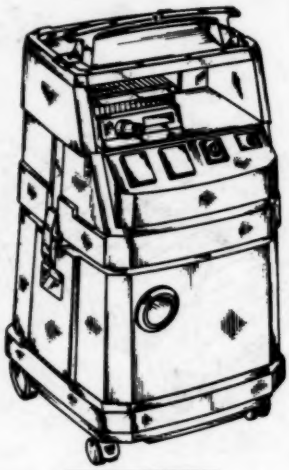
333,886
PET DISH WITH TIMER
Michael Kennedy, 121 Hill La., Mechanicsburg, Pa. 17055
Filed Jun. 5, 1990, Ser. No. 533,702
Term of patent 14 years
U.S. Cl. D30—122



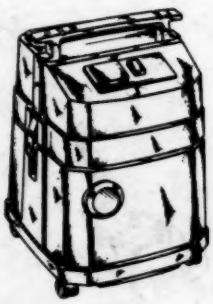
333,887
PET EXERCISER TREADMILL
Margaret A. Dowler, 902 Vine St., Collinsville, Ill. 62234
Filed Feb. 15, 1991, Ser. No. 655,925
Term of patent 14 years
U.S. Cl. D30—160

333,888
SCOOP FOR PICKING UP PET DROPPINGS
Dennis J. Visser, 4603 S. Hoyt St., Littleton, Colo. 80123
Filed Apr. 26, 1991, Ser. No. 692,061
Term of patent 14 years
U.S. Cl. D30—162

333,889
VACUUM CLEANER
Rainer Oberdorfer-Bogel, Kirchberg/Iller, Fed. Rep. of Germany, assignor to Wap Reinigungsysteme GmbH & Co., Fed. Rep. of Germany
Division of Ser. No. 524,098, May 10, 1990. This application Mar. 3, 1992, Ser. No. 847,240
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1989, 8997254
Term of patent 14 years
U.S. Cl. D32—23

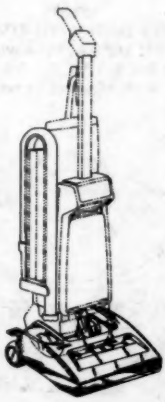


333,890
VACUUM CLEANER
Rainer Oberdorfer-Bogel, Kirchberg/Iller, Fed. Rep. of Germany, assignor to Wap Reinigungsysteme GmbH & Co., Fed. Rep. of Germany
Division of Ser. No. 524,098, May 10, 1990. This application Mar. 3, 1992, Ser. No. 847,241
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1989, 8997254
Term of patent 14 years
U.S. Cl. D32—23

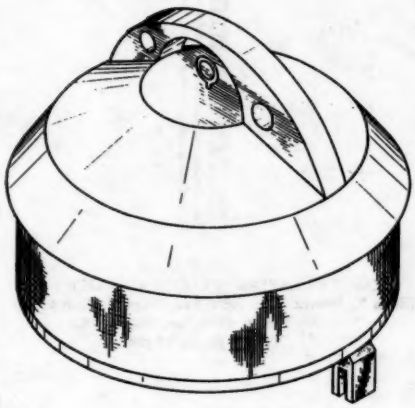


333,891
FILTER FOR A VACUUM CLEANER
Charles A. Reed, Jr., Shelton; Charles Z. Krasznai, Trumbull; Richard B. Kosten, West Haven, and Maurice A. Melito, East Haven, all of Conn., assignors to Black & Decker Inc., Newark, Del.
Filed Jul. 11, 1990, Ser. No. 550,932
Term of patent 14 years
U.S. Cl. D32—30

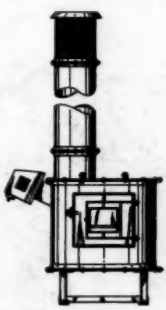
333,892
VACUUM CLEANER NOZZLE
Richard A. Wareham, North Canton, Ohio, assignor to The Hoover Company, North Canton, Ohio
Filed Dec. 23, 1991, Ser. No. 812,219
Term of patent 14 years
U.S. Cl. D32—32



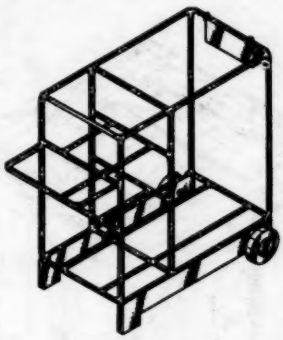
333,893
TRASH BURNING CONTAINER
Fred Washburn, 814 S. 4th St., Marshall, Ill. 62441
Filed Aug. 15, 1991, Ser. No. 745,378
Term of patent 14 years
U.S. Cl. D34—1.1



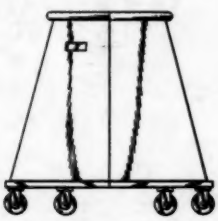
333,894
PATHALOGICAL WASTE INCINERATOR FOR FARM USE
William H. Johnson, Harrisonburg, Va., assignor to Shenandoah Manufacturing Co., Inc., Harrisonburg, Va.
Filed Sep. 30, 1991, Ser. No. 767,924
Term of patent 14 years
U.S. Cl. D34—1.1



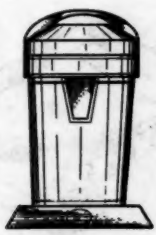
333,895
TRASH RECYCLING CART
Michael J. Niemeyer, 2916 N. Magellan Dr., McHenry, Ill. 60050
Filed Dec. 13, 1991, Ser. No. 806,440
Term of patent 14 years
U.S. Cl. D34—5



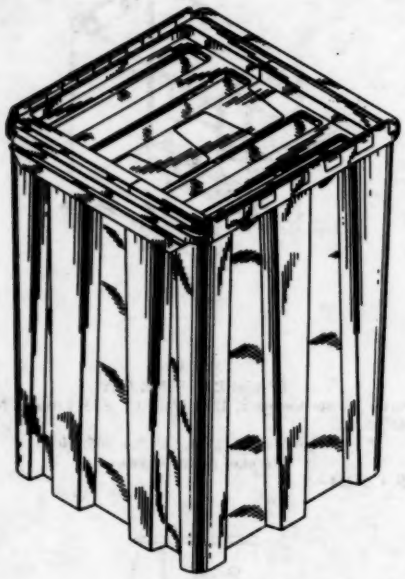
333,896
TRASH BAG TROLLEY
Charles W. Starkweather, 1231 Wells Ct. #33, Lincoln, Nebr. 68505
Filed May 24, 1991, Ser. No. 705,270
Term of patent 14 years
U.S. Cl. D34—5



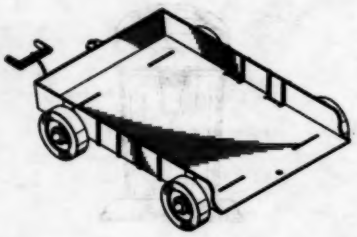
333,897
NON-TIPPING TRASH CONTAINER
David E. Ward, 340 Graystone Dr., Hanover, Ind. 47243
Filed Jul. 18, 1991, Ser. No. 731,908
Term of patent 14 years
U.S. Cl. D34—7



333,898
WASTE CONTAINER
Curt J. Schulze, Lakeland, Fla., and James M. Nichols, Old Saybrook, Conn., assignors to Browning-Ferris Industries Inc., Houston, Tex.
Filed Jul. 25, 1991, Ser. No. 735,478
Term of patent 14 years
U.S. Cl. D34—7

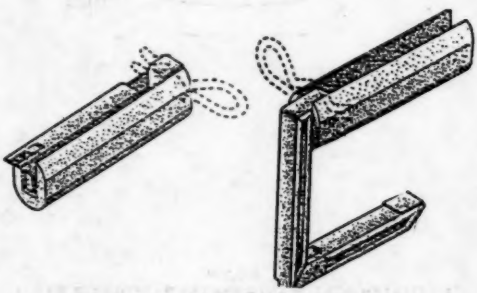


333,899
RECREATIONAL CART
Roberto Caceres, 730 W. 6th, Freeport, Tex. 77541
Filed Oct. 19, 1990, Ser. No. 600,504
Term of patent 14 years
U.S. Cl. D34—17

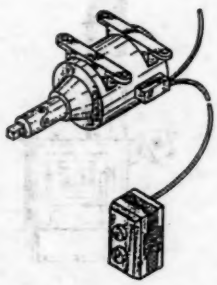


333,900
SHOPPING CART BUMPER
Kevin D. Kinnamon, Ft. Gibson, and Ronald J. Jones, Muskogee, both of Okla., assignors to Unarco Industries, Inc., Chicago, Ill.
Continuation of Ser. No. 706,055, May 28, 1991, Pat. No. 5,131,669. This application May 18, 1992, Ser. No. 885,204
Term of patent 14 years
U.S. Cl. D34—27

333,901
COLLAPSIBLE BLOCK CARRIER
William K. Swartz, 1316 Pritz Ave., Dayton, Ohio 45410
Filed Dec. 6, 1990, Ser. No. 624,908
Term of patent 14 years
U.S. Cl. D34—28



333,902
COMBINED TRACTOR TRAILER LIFTER AND SWITCH THEREFOR
Russell D. Cunningham, R.R. 8, Box 399, Decatur, Ill. 62522
Filed May 9, 1991, Ser. No. 697,463
Term of patent 14 years
U.S. Cl. D34—28



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TO WHOM

PATENTS WERE ISSUED ON THE 9TH DAY OF MARCH, 1993

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Corporation: *See*—
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Immonen, Pasi; and Kohonen, Ramio, 5,192,454, Cl. 210-780.000.
Malmstrom, Rolf; and Petersson, Stig, 5,192,487, Cl. 266-201.000.

A. H. Robins Company, Incorporated: *See*—
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A.W.A.X. Progettazione e Ricerca S.r.l.: *See*—
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ABB Power T&D Company: *See*—
Matty, Thomas C.; Colclasser, Robert G., III; and Hitchins, Gary O., 5,193,111, Cl. 379-106.000.

ABB Reaktor GmbH: *See*—
Schulz, Wolfgang, 5,192,491, Cl. 376-159.000.

ABB Vetco Gray Inc.: *See*—
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Abbas, Ibrahim R.: *See*—
Chang, Shau-Gan; Charlton, Linda L.; Gottneid, Jane D.; and Abbas, Ibrahim R., 5,192,576, Cl. 426-578.000.

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Fellingham, George H.; Koll, Lance B.; and Hughes, Timothy J., 5,191,795, Cl. 73-599.000.
Hochlowski, Jill E.; Buytendorp, Mark H.; Chen, Randal H.; McAlpine, James B.; Theriault, Robert J.; Jackson, Marianna; and Karwowski, James P., 5,192,748, Cl. 514-25.000.
Pezzoli, Paul A.; Araujo, Antonino, Jr.; and Hazlett, Raymond W., 5,191,975, Cl. 206-151.000.
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Nicholas, Michael G.; and Guthrie, Warren, 5,193,210, Cl. 455-38.100.

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Nozaki, Katsuhiko; and Abe, Tetsuya, 5,193,030, Cl. 359-687.000.
Yoshida, Kazushi; Ogawa, Ryota; and Abe, Tetsuya, 5,192,961, Cl. 353-66.000.

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Radhakrishnan, Ramachandran; Mihalko, Paul J.; and Abra, Robert M., 5,192,528, Cl. 424-45.000.

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Kaneko, Tokuharu; Nakayama, Miho; Miyata, Masanori; Honjo, Takeshi; Adachi, Hideki; and Kanazawa, Toshiya, 5,192,977, Cl. 355-313.000.

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King, Wendell L.; Kane, Lawrence M.; and Adams, Theodore P., 5,192,311, Cl. 623-1.000.

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Malen, Charles; de Nanteuil, Guillaume; and Colpaert, Francis, 5,192,775, Cl. 514-321.000.

Adler, Alan J. Stepped hydroplane hull. 5,191,853, Cl. 114-291.000.

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Sliwa, John W., Jr.; and Dixit, Pankaj, 5,192,715, Cl. 437-195.000.

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Gaffar, Abdul; Nabi, Nuran; Afflitto, John; Stringer, Orum; and Prencipe, Michael, 5,192,531, Cl. 424-52.000.

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Hoshino, Sumio; Kanamori, Hiroo; Ito, Masumi; Ishikawa, Shinji; and Aikawa, Haruhiko, 5,193,137, Cl. 385-129.000.

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Birdwell, Gaylon W., 5,192,194, Cl. 417-9.000.

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Aisin Seiki Kabushiki Kaisha: *See*—
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Akasu, Hiroyuki: *See*—
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Albrecht, Hans-Jurgen: *See*—
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Andelman, Marc D. Flow-through capacitor. 5,192,432, Cl. 210-198.200.

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Ando, Yuji, to NEC Corporation. Heterojunction field effect transistor equipped with electrostatic lens for improving ballistic propagation. 5,192,986, Cl. 257-192.000.

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Uhr, Hermann; Marhold, Albrecht; Andres, Peter; Erdelen, Christoph; Wachendorff-Neumann, Ulrike; and Stendel, Wilhelm, 5,192,794, Cl. 514-422.000.

Andresen, Kenneth W.: *See*—
Baughman, Ernest H.; Winston, John R.; and Andresen, Kenneth W., 5,191,786, Cl. 73-64.450.

Angeion Corporation: *See*—
King, Wendell L.; Kane, Lawrence M.; and Adams, Theodore P., 5,192,311, Cl. 623-1.000.

Anselmo, Robert A.: *See*—
Umina, Leonard J.; and Anselmo, Robert A., 5,193,071, Cl. 365-189.010.

ANT Nachrichtentechnik GmbH: *See*—
Nathan, Adolf, 5,192,906, Cl. 323-284.000.

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Berdinsky, Marvin; Smithwick, Robert P., II; Wilson, Michael J.; and Antetomaso, Charles J., 5,191,732, Cl. 43-55.000.

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Aoki, Eiichiro, to Yamaha Corporation. Electronic musical instrument having an effect manipulator. 5,192,826, Cl. 84-737.000.

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Hatano, Susumu; Oishi, Kanji; Kikuchi, Takashi; Saigou, Yasuhiko; Fukuta, Hiroshi; Uchiyama, Kunio; Aoki, Hirokazu; and Nishii, Osamu, 5,193,075, Cl. 365-233.000.

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Aoki, Takeshi: *See*—
Kawakami, Soichiro; Kanai, Masahiro; and Aoki, Takeshi, 5,192,717, Cl. 439-233.000.

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Aoyama, Yoshitaka. Apparatus for feeding slender parts. 5,191,691, Cl. 29-281.400.

APA Optics, Inc.: *See*—
Khan, Muhammed A.; VanHove, James M.; Kuznia, Jon N.; and Olson, Donald T., 5,192,987, Cl. 257-183.100.

Apache Building Products Company: *See*—
Soukup, Thomas G., 5,192,607, Cl. 428-314.400.

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Lorimer, D'Arcy H.; and Bercaw, Craig A., 5,192,610, Cl. 428-33.600.

Applied Medical Resources, Inc.: *See*—
Hilal, Said, 5,192,290, Cl. 606-159.000.

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Peterson, Jeffrey M.; Evers, Ronald P.; Rusch, Peter G.; Dwyer, Duane D.; Macky, Barry L.; and Boldt, James D., 5,192,063, Cl. 269-257.000.

Applikations und Technikzentrum fur Energieverfahrens, Umwelt und Stromungstechnik: *See*—
Fassbinder, Hans-Georg, 5,191,802, Cl. 73-861.370.

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Elischer, Victor P.; Keret, Ilan; Johnson, Milton; Tumenbatur, Ihsan; and Aragon, David B., 5,193,121, Cl. 382-7.000.

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Inoue, Yoshifumi; Saito, Kin; Imai, Keisuke; and Arai, Masatoshi, 5,192,364, Cl. 106-287.160.

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Araki, Nobuo; Kagami, Takeji; Chatani, Yoji; Kikuta, Shunichi; Yamada, Iwao; Kamada, Masao; Hashimoto, Seiji; Ueno, Shuichi; Fukui, Takeshi; Nakamura, Takumi; Mizuhashi, Nobuo; and Ishikawa, Yasushi, to Nippon Steel Corporation; and Nippon Steel Welding Products & Engineering Co., Ltd. Methods for manufacturing tubes filled with powdery and granular substances. 5,192,016, Cl. 228-147.000.

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Iwami, Morita; Aramori, Ichiro; Fukagawa, Masao; Isogai, Takao; and Kojo, Hitoshi, 5,192,678, Cl. 435-228.000.

Araujo, Antonino, Jr.: *See*—
Pezzoli, Paul A.; Araujo, Antonino, Jr.; and Hazlett, Raymond W., 5,191,975, Cl. 206-151.000.

Araujo, Roger J.; and Love, Walter F., to Corning Incorporated. Method of dealkalizing glass. 5,192,402, Cl. 204-130.000.

Archibald, Roy D.: *See*—
Davis, Jeffrey P.; Chandrasekaran, Santosh K.; Su, Yansheng; Archibald, Roy D.; and Robinson, Joseph R., 5,192,535, Cl. 424-78.040.

ARCO Chemical Technology, L.P.: *See*—
Jones, C. Andrew; Gaffney, Anne M.; Leyshon, David W.; Cozzone, Glenn E.; and Sofranko, John A., 5,192,809, Cl. 521-40.000.

Arczo Medical Electronics, Inc.: *See*—
Bilof, Richard M.; and Schwartz, Stuart E., 5,191,885, Cl. 128-419.00D.

Areal Technology, Inc.: *See*—
Pace, Louis G., 5,193,037, Cl. 360-106.000.

Arents, Robert A.; and Patterson, Everett C., to Philip Morris Incorporated. Trash removal apparatus and method. 5,191,904, Cl. 131-96.000.

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Attridge, John W.; and Smith, Alan M., 5,192,502, Cl. 422-57.000.

Arison, Byron H.; Schulman, Marvin D.; and Doherty, Patrick J., to Merck & Co., Inc. Process for the glycosylation of avermectin compounds. 5,192,671, Cl. 435-101.000.

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Treiber, Laszlo R.; Colwell, Lawrence F., Jr.; Arison, Byron H.; Dezeny, Georgette; Lingham, Russell B.; Thompson, Wayne J.; and Balani, Suresh K., 5,192,668, Cl. 435-41.000.

Arizona Board of Regents Acting for the University of Arizona: *See*—
Bowers, William S.; and Sugiyama, Takeyoshi, 5,192,787, Cl. 514-404.000.

Arkelon Research: *See*—
Bassili, John N.; and Fletcher, Joseph F., 5,193,058, Cl. 364-419.000.

Armco, Inc.: *See*—
Wright, Wade S.; and Murphy, Robin A., 5,192,373, Cl. 148-113.000.

Armistead, David A.; Boger, Joshua S.; Meyers, Harold V.; Saunders, Jeffrey O.; and Tung, Roger D., to Vertex Pharmaceuticals, Inc. Immunosuppressive compounds. 5,192,773, Cl. 514-315.000.

Arnott, Robin, to Husky Injection Molding Systems Ltd. Apparatus for molding plastic articles. 5,192,555, Cl. 425-544.000.

Aronowitz, Sheldon; and Ramde, Amolak, to National Semiconductor Corporation. Control and moderation of aluminum in silicon using germanium and germanium with boron. 5,192,712, Cl. 437-143.000.

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Taylor, Richard F.; Marenchic, Ingrid G.; and Cook, Edward J., 5,192,507, Cl. 422-68.100.

Arthur Pfeiffer Vakuumtechnik Wetzlar GmbH: *See*—
Hack, Robert; and Polhede, Wilhelm, 5,193,100, Cl. 373-112.000.

Artieri, Alain, to SGS-Thomson Microelectronics, S.A. System for rearranging sequential data words from an initial order to an arrival order in a predetermined order. 5,193,203, Cl. 395-800.000.

Arumainayagam, Allen T.: *See*—
Jones, Scott A.; Arumainayagam, Allen T.; Mukherjee, Amitava; Picard, Donald F.; and Cohen, Richard E., 5,193,110, Cl. 379-94.000.

Arzneimittelwerk Dresden GmbH: *See*—
Wunderlich, Helmut; Stark, Andreas; Lohmann, Dieter; Zenkar, Lothar; Bartsch, Reni; Poppe, Hildegard; Skoldinov, Aleksandr P.; Kaverina, Natalja V.; Grizenko, Anna N.; Lyakovzev, Valentin V.; and Grigoreva, Ekaterina K., 5,192,760, Cl. 514-217.000.

Asaa Technologies, Inc.: *See*—
Ausavich, Timothy C.; Gohr, Kevin P.; and Carver, Glyn, 5,191,843, Cl. 108-56.300.

Asada, Junichi: *See*—
Nishiwaki, Seiji; Taketomi, Yoshinao; Uchida, Shinji; Tomita, Takaaki; and Asada, Junichi, 5,193,130, Cl. 385-14.000.

Asahi Kogaku Kogyo K.K.: *See*—
Nozaki, Katsuhiko; and Abe, Tetsuya, 5,193,030, Cl. 359-687.000.
Suzuki, Noboru; and Toji, Shigeo, 5,192,965, Cl. 354-400.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Noguchi, Masato, 5,193,028, Cl. 359-581.000.
Yoshida, Kazushi; Ogawa, Ryota; and Abe, Tetsuya, 5,192,961, Cl. 353-66.000.

Asakuni, Takahiro: *See*—
Takaishi, Yoshihisa; Goto, Kiyoto; Uesako, Takuji; Kuwahara, Toshiko; Takai, Masaaki; Ono, Yukihisa; Taniguchi, Yoshihiro; Manabe, Sachiko; and Asakuni, Takahiro, 5,192,817, Cl. 549-298.000.

Asano, Masaki: *See*—
Ikegawa, Akihito; Asano, Masaki; Iino, Shuji; and Osawa, Izumi, 5,192,974, Cl. 355-219.000.

Assoka, Masanobu: *See*—
Hanyu, Yukio; and Asaoka, Masanobu, 5,192,596, Cl. 428-1.000.

Ashida, Kenichiro: *See*—
Inoue, Yoshihiro; and Ashida, Kenichiro, 5,192,082, Cl. 273-435.000.

Ashihara, Hideyuki. Guard baton with rotating crosshandle. 5,192,074, Cl. 273-84.00R.

Ashihara, Hideyuki. Telescoping guard baton with rotatable cross handle. 5,192,075, Cl. 273-84.00R.

ASM Japan K.K.: *See*—
Shuto, Mitsutoshi; Fukazawa, Yasushi; and Ohsaki, Minoru, 5,192,371, Cl. 118-728.000.

Asprey, Robert R.; and Shatas, Remigius G., to Cybex Corporation. Computer-monitor extended range communications link for attenuating and subsequently restoring high frequency components of transmitted video signals. 5,193,200, Cl. 395-800.000.

Ash, Daniel. Vehicle axle control system. 5,193,063, Cl. 364-424.050.

AT&T Bell Laboratories: *See*—
Brockway, Robert C.; Dietz, Philip S.; and Nguyen, Lo C., 5,191,970, Cl. 200-335.000.

Atchley, Curtis L. Rotatable solar collection system. 5,191,876, Cl. 126-576.000.

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Weiglein, Arthur B.; Keho, Timothy H.; and Secrest, Bruce G., 5,193,077, Cl. 367-23.000.

Atochem: *See*—
Berger, Noelle; Commandeur, Raymond; and Jay, Pierre, 5,192,463, Cl. 252-570.000.
Duranel, Laurent; Spitz, Roger; and Soto, Thierry, 5,192,732, Cl. 502-126.000.

Atrium Medical Corporation: *See*—
Herweck, Steve A.; Karwoski, Theodore; and Martakos, Paul, 5,192,310, Cl. 623-1.000.

Attridge, John W.; and Smith, Alan M., to Ares-Serono Research & Development Limited Partnership. Devices for use in chemical test procedures. 5,192,502, Cl. 422-57.000.

Audeh, Costandi A.; and Rankel, Lillian A., to Mobil Oil Corporation. Integrated process for whole crude deasphalting and asphaltene upgrading. 5,192,421, Cl. 208-309.000.

Auergesellschaft GmbH: *See*—
Vogliano, German, 5,191,882, Cl. 128-207.110.

Aufenanger, Johannes: *See*—
Pill, Johannes; Aufenanger, Johannes; Konrad, Thomas; and Junemann, Klaus-Peter, 5,192,806, Cl. 514-562.000.

Augustin, Thomas; and Keldenich, Jorg, to Bayer Aktiengesellschaft. Process for breaking oil-in-water emulsions. 5,192,448, Cl. 210-708.000.

Aurora Equipment Co.: *See*—
Wallin, Robert M., 5,192,123, Cl. 312-351.700.

Ausavich, Timothy C.; Gohr, Kevin P.; and Carver, Glyn, to Asaa Technologies, Inc. Pallet with molded plastic pallet spacer feet. 5,191,843, Cl. 108-56.300.

Austin, Clarence G.: *See*—
Bailey, Richard E.; and Austin, Clarence G., 5,192,158, Cl. 404-11.000.

Austin, Dennis K.; and Thomas, J. Donaldson, to Ensign-Bickford Company, The. Detonating cord and blasting cap connector block having a resilient free end cord latch. 5,192,828, Cl. 102-275.120.

Austoft Industries Limited: *See*—
Baker, Malcolm J., 5,191,759, Cl. 56-500.000.

Avatar Design and Development, Inc.: *See*—
Jessen, John W., 5,192,289, Cl. 606-155.000.

Avery International Corporation: *See*—
Otter, James W.; and Watts, Gary R., 5,192,612, Cl. 428-355.000.

Awai, Takashi: *See*—
Yokoyama, Minoru; Awai, Takashi; Tomoda, Akihiro; Ishida, Yasushi; Terajima, Hisao; Ono, Takeshi; Yoshida, Takehiro; Wada, Satoshi; and Kobayashi, Makoto, 5,193,007, Cl. 358-296.000.

Awaya, Akira: *See*—
Tomino, Ikuo; Ishiguro, Masaharu; Kitahara, Takumi; Yokoyama, Keiichi; Kihara, Noriaki; Kamiya, Joji; Yoshihara, Kanji; Ishii, Masaaki; Mizuchi, Akira; Horikomi, Kazutoshi; Awaya, Akira; and Nakano, Takuo, 5,192,799, Cl. 514-469.000.

Awiszio, Desiree A.; Soman, Satish; and Clark, Paul H., to Digital Equipment Corporation. Dual-path computer interconnect system with four-ported packet memory control. 5,193,149, Cl. 395-200.000.

Ayer, Atul D.: *See*—
Edgren, David E.; Carpenter, Howard A.; Bhatti, Gurdish K.; and Ayer, Atul D., 5,192,550, Cl. 424-473.000.

Ayuso, Anthony: *See*—
Nayyar, Baldev K.; Kellner, Gabor; Pinchis, Peter; Martinek, Joseph; Ayuso, Anthony; and Weiss, Julius, 5,191,722, Cl. 34-12.000.

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Ibarrola, Jesus E., 5,191,956, Cl. 194-317.000.

Azuma, Masaaki: *See*—
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B. F. Goodrich Company, The: *See*—
Karasz, Frank E.; and Huh, Wansoo, 5,192,479, Cl. 264-171.000.

Baal Associates, Inc.: *See*—
Strickland, Richard D.; and Saccomanno, Geno, 5,191,899, Cl. 128-756.000.

Babcock & Wilcox Company: *See*—
Caldwell, Colin S.; and Moeller, Helen H., 5,192,495, Cl. 376-417.000.

Babin, Didier; Benoit, Marc; Demoute, Jean-Pierre; and Tessier, Jean, to Roussel Uclaf. 3-[2-cyano-2-halo-ethenyl]-2,2-dimethyl-cyclopropanecarboxylates. 5,192,801, Cl. 514-521.000.

Babu, Gaddam N., to Minnesota Mining and Manufacturing Company. Macromolecular monomers from living polymers. 5,192,616, Cl. 428-407.000.

Bachman, Charles W.; Gane, Christopher P.; Krieger, David A.; Micco, John T.; and Abramovich, Igor, to Bachman Information Systems, Inc. Computer system for defining logical operations on design data including retrieve entity-set, send, receive, signal, when, reference to entity-set, reference to entity method, connect and disconnect. 5,193,182, Cl. 395-600.000.

Bachman, Charles W., to Bachman Information Systems, Inc. System for accessing design data of modeler subsystems by reference to partnership set and for dynamically correlating design data of modeler subsystems. 5,193,183, Cl. 395-600.000.

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Bachman, Charles W.; Gane, Christopher P.; Krieger, David A.; Micco, John T.; and Abramovich, Igor, 5,193,182, Cl. 395-600.000.
Bachman, Charles W., 5,193,183, Cl. 395-600.000.

Backlund, Ake, to Kamyr AB. Process for the continuous digestion of cellulosic fiber material. 5,192,396, Cl. 162-19.000.

Backus, Darlene F. Orthopedic access pants. 5,191,659, Cl. 2-227.000.

Bader, Bernard R. Self-cleaning filter. 5,192,429, Cl. 210-170.000.

Bagrin, Leonid A.: *See*—
Spencer, Victor V., deceased; Spencer, Mary, executrix; and Bagrin, Leonid A., 5,192,602, Cl. 428-179.000.

Bahal, Surendra M.; Field, Kenneth S.; and Maurin, Michael B., to Du Pont Merck Pharmaceutical Company. Etanidazole injectable solution. 5,192,784, Cl. 514-398.000.

Bahoric, Andre: *See*—
Drake, James M.; Fox, Richard; and Bahoric, Andre, 5,192,265, Cl. 604-10.000.

Baikrich, Michel. Divergence and marking device for a target marker. 5,193,031, Cl. 359-800.000.

Bailey, Richard E.; and Austin, Clarence G., to Park N' Shade. Apparatus for controlling the direction of vehicular traffic movement. 5,192,158, Cl. 404-11.000.

Baker Hughes Incorporated: *See*—
Hyll, John, 5,192,142, Cl. 403-16.000.

Baker, Malcolm J., to Austoft Industries Limited. Basecutter gearbox for a sugar cane harvester. 5,191,759, Cl. 56-500.000.

Baker, Mark W.: *See*—
Silvestri, James T.; Podhaisky, Todd D.; Klein, Timothy E.; Baker, Mark W.; and Czarnek, David J., 5,192,152, Cl. 400-679.000.

Baker, R. Ralph: *See*—
Ahmad, Syed J.; and Baker, R. Ralph, 5,192,686, Cl. 435-254.000.

Baker, William H.: *See*—
Chung, T. Mark; Orchard, Anthony G.; Baker, William H.; and Bradford, Charles L., 5,192,141, Cl. 400-56.000.

Balani, Suresh K.: *See*—
Treiber, Laszlo R.; Colwell, Lawrence F., Jr.; Arison, Byron H.; Dezeny, Georgette; Lingham, Russell B.; Thompson, Wayne J.; and Balani, Suresh K., 5,192,668, Cl. 435-41.000.

Bales, Ronald K., to Square D Company. Din rail mounting bracket. 5,192,227, Cl. 439-532.000.

Bales, Thomas O.: *See*—
Smith, Kevin W.; Slater, Charles R.; Murphy, Gregory J.; Bales, Thomas O.; Box, John W.; and Scarfone, Frank A., 5,192,298, Cl. 606-205.000.

Ball, Anthony A.; and Rodiger, Ulrich, to Schubert & Salzer Maschinenfabrik AG. Process and device for piecing on an open-end spinning device. 5,191,760, Cl. 57-263.000.

Ballard, Michael D.: *See*—
Marzullo, Joseph H.; Graveson, Sandra J.; Ballard, Michael D.; and Mrozinski, Curtis L., 5,191,751, Cl. 53-569.000.

Balmer, Bruce. Wing attachment for bird decoys. 5,191,730, Cl. 43-3.000.

Balow, Frank A.: *See*—
Boston, William A.; Balow, Frank A.; and Skipor, Eugene, 5,191,672, Cl. 15-256.500.

Balukin, Richard F.; Newingham, John B.; and Jerina, Frank J., to Westinghouse Air Brake Company. Electro-pneumatic locomotive brake control system. 5,192,118, Cl. 303-15.000.

Balzers AG: *See*—
Ramm, Jurgen; Daxinger, Helmut; Buhl, Rainer; and Bergmann, Erich, 5,192,578, Cl. 427-576.000.

Bango, Oscar L.: *See*—
Strunc, Robert W.; and Bango, Oscar L., 5,192,467, Cl. 261-122.100.

Bao, Qi-Bin; and Higham, Paul A., to Pfizer Hospital Products Group, Inc. Hydrogel bead intervertebral disc nucleus. 5,192,326, Cl. 623-17.000.

Barbour, Russell G.; Soeder, Carl A.; and Ciavaglia, Stephen J., to Hewlett-Packard Company. Piplined system includes a selector for loading condition code either from first or second condition code registers to program counter. 5,193,157, Cl. 395-375.000.

Bard, Steven L.; and Jones, Jeffrey D., to International Business Machines Corporation. Fluid treatment apparatus and method. 5,192,394, Cl. 156-640.000.

Bardos, Thomas J.: *See*—
Cheng, Yung-Chi; Lin, Tai-Shun; and Bardos, Thomas J., 5,192,764, Cl. 514-252.000.

Barenolz, Yechezkel; and Haran, Gilad, to Yissum Research Development Company of the Hebrew University of Jerusalem. Method of amphiphatic drug loading in liposomes by pH gradient. 5,192,549, Cl. 424-450.000.

Bargfrede, Brent C.; Carter, Carl W.; Neal, James G.; and Purcell, Robert J., to Caterpillar Inc. Belted undercarriage assembly. 5,191,951, Cl. 180-9.100.

Barlow, George J.; Keeley, James W.; Lemay, Richard A.; Shen, Jian-Kuo; Ledoux, Robert V.; Joyce, Thomas F.; Kelly, Richard P.; Miller, Robert C.; and Ledoux, Frances A., to Bull HN Information Systems Inc. Recovery method and apparatus for a pipelined processing unit of a multiprocessor system. 5,193,181, Cl. 395-575.000.

Barnes, Michael; and Koskelowsky, Joseph, to Norco, Inc. Latch construction. 5,192,098, Cl. 292-207.000.

Barniah, Ian T.; Danilewicz, John C.; James, Keith; Samuels, Gillian M. B.; Terrett, Nicholas K.; Williams, Michael T.; and Wythes, Martin J., to Pfizer Inc. Glutaramide diuretic agents. 5,192,800, Cl. 514-510.000.

Baron, Robert A.; and Haber, Frederick. Apparatus for enhancing the environmental quality of work spaces. 5,192,342, Cl. 55-97.000.

Barr, Craig K.; and Alexander, Peter N., to Universal City Studios, Inc. Ride attraction. 5,192,247, Cl. 472-60.000.

Barratt, Stephen C.; and Grant, Brian W., to Alcatel Business Systems Limited. Protection of electronic circuits. 5,193,047, Cl. 361-212.000.

Barrier, James M.; Drey, Mark D.; Montford, Leslie V.; and Tan, Stephen S., to Kaiser Aerospace and Electronics Corporation. Methods for forming composite tubing having tapered ends. 5,192,384, Cl. 156-189.000.

Barrow, Jon E.: *See*—
Guerindon, Pierre C.; and Barrow, Jon E., 5,193,065, Cl. 364-468.000.

Barrows, Peter S.; and Watson, Clyde D., to FMC Corporation. Closed transfer means. 5,191,919, Cl. 141-2.000.

Barry, Daniel T.; Fredericksen, Raymond M.; Soutas-Little, Robert W.; and Peterson, Ruk R., to Wolverine World Wide, Inc. Propulsion plate hydrodynamic footwear. 5,191,727, Cl. 36-107.000.

Bartels, Craig R., to Texaco, Inc. Membrane suitable for the dehydration of organic oxygenates. 5,192,445, Cl. 210-640.000.

Bartsch, Reni: *See*—
Wunderlich, Helmut; Stark, Andreas; Lohmann, Dieter; Zenkar, Lothar; Bartsch, Reni; Poppe, Hildegard; Skoldinov, Aleksandr P.; Kaverina, Natalja V.; Grizenko, Anna N.; Lyskovzev, Valentin V.; and Grigoreva, Ekaterina K., 5,192,760, Cl. 514-217.000.

BASF Aktiengesellschaft: *See*—
Betz, Walter; and Blinne, Gerd, 5,192,477, Cl. 264-129.000.
Harth, Klaus; and Hibst, Hartmut, 5,193,085, Cl. 369-275.200.
Rentzea, Costin; and Rademacher, Wilhelm, 5,192,358, Cl. 504-307.000.
Zipperer, Bernhard; Goetz, Norbert; Buschmann, Ernst; Sproesser, Linhard; Ammermann, Eberhard; and Lorenz, Gisela, 5,192,767, Cl. 514-277.000.

BASF Magnetics GmbH: *See*—
Richter, Hans J.; Hibst, Hartmut; and Fischer, Gerd, 5,192,583, Cl. 427-128.000.

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Boggs, Roger A.; Borror, Alan L.; Conlon, Patrick R.; Cournoyer, Richard L.; Ellis, Ernest W.; and Waller, David P., to Polaroid Corporation. Thermal imaging method. 5,192,645, Cl. 430-338.000.

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Bolton, John G., to Chusid Pty. Ltd. Hand stamp with folding handle. 5,191,837, Cl. 101-333.000.

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Jones, Scott A.; Arumainayagam, Allen T.; Mukherjee, Amitava; Picard, Donald F.; and Cohen, Richard E., 5,193,110, Cl. 379-94.000.

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Peterson, Preston E.; Peterson, Chester L.; and Ryan, Andrew J., 5,192,392, Cl. 156-566.000.

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Bowling, Keith M.: *See*—
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Bowron, John W.: *See*—
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Weiglein, Arthur B.; Keho, Timothy H.; and Secrest, Bruce G., 5,193,077, Cl. 367-23.000.

Bradford, Charles L.: *See*—
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Preston, Keith R., 5,193,027, Cl. 359-566.000.

Britman, Sergiu A., to Northern Telecom Limited. Method of inducing off-circuit behavior in a physical model. 5,193,068, Cl. 364-578.000.

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Ther, James; Brockett, Brendan L.; and Patterson, John H., 5,192,171, Cl. 407-114.000.

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Ludwig, Craig S., 5,192,348, Cl. 55-385.200.

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Patel, Mansukh M.; Broderick, Kevin B.; Meyers, Marc A.; Schnell, Philip G.; Song, Joo H.; Yatka, Robert J.; and Zibell, Steven E., 5,192,563, Cl. 426-5.000.

Brotsky, Eugene: *See*—
Bender, Fredric G.; and Brotsky, Eugene, 5,192,570, Cl. 426-332.000.

Broughton, George L.; and Breckenfeld, Paul W., to Outboard Marine Corporation. Marine propulsion device with closed deck cylinder block construction. 5,191,860, Cl. 123-41.740.

Brouwer, Charles W.; Lang, Roger D.; and Perrino, Thomas W., to John Brown Inc. Automatic winding unit. 5,192,032, Cl. 242-35.50A.

Brown, Carl W., Jr.: *See*—
Hruska, Louis W.; Brown, Carl W., Jr.; and Graham, Christopher E., 5,192,473, Cl. 264-102.000.

Brown, Gordon T.; and Scherer, Richard H. Accounting system. 5,193,055, Cl. 364-406.000.

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Browning, Robert E.; and Browning, R. McKim, 5,191,873, Cl. 125-15.000.

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Boyse, Edward A.; Broxmeyer, Hal E.; and Douglas, Gordon W., 5,192,553, Cl. 424-529.000.

Bru-Magniez, Nicole; Launay, Michele; and Teulon, Jean-Marie, to Laboratoires UPSA. Thiazole derivatives which are angiotensin II receptor antagonists, their methods of preparation and pharmaceutical compositions in which they are present. 5,192,781, Cl. 514-365.000.

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Dalrymple, Monte J.; Smith, Don; and Brubaker, Lois F., 5,193,199, Cl. 395-775.000.

Bruckman, Leon: *See*—
Lichtash, Avi; Vitelson, Israel; Huna, Zvi; Markus, Reuven; Nosatzki, Michal; Gutman, Baruch; Orbach, Shlomo; Taler, Rafi; Moshe, Yossi; Bruckman, Leon; and Agmon, Gideon, 5,193,087, Cl. 370-58.200.

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Brumme, Gerhard: *See*—
Grage, Ludger; Kranz, Wolfgang; and Brumme, Gerhard, 5,192,979, Cl. 356-28.500.

Brunn, Rainer; and Klebl, Wolfram, to Kabelmetal Electro GmbH. Process and circuit for regulating welding current and power as a function of welding speed. 5,192,850, Cl. 219-130.210.

Brunner, Rudolf, to Heilmeier & Weinlein Fabrik fur Oel-Hydraulik. Hydraulic control device. 5,191,826, Cl. 91-418.000.

Bruno, Adrien, to France Telecom Etablissement Autonome de Droit Public. Optoelectronic device with an integrated optical guide and photodetector. 5,193,131, Cl. 385-14.000.

Bruyette, David S.: *See*—
Ruehl, William W.; Bruyette, David S.; and Stevens, David, 5,192,808, Cl. 514-654.000.

Bryant, Frank: *See*—
Hodges, Robert; and Bryant, Frank, 5,192,707, Cl. 437-70.000.

Bryant, Sheree M. Baby bottle holder. 5,192,041, Cl. 248-104.000.

Bryde-Hansen, Bent. Machine for stacking cup-shaped containers. 5,192,181, Cl. 414-795.300.

BS&B Safety Systems, Inc.: *See*—
Fritts, Donald K., 5,191,990, Cl. 220-88.100.

Buckley, Daniel T., to C.A. Lawton Company, The. Method of making preforms. 5,192,387, Cl. 156-275.500.

Bucks, James L. Double ramp, full length grip collet. 5,192,086, Cl. 279-4.090.

Budd, John C.; and Campbell, Louis A., to Carbomedics, Inc. Heart valve prosthesis with improved bi-leaflet pivot design. 5,192,313, Cl. 623-2.000.

Budolfson, Robert A. Exercise system. 5,192,259, Cl. 482-93.000.

Buhl, Rainer: *See*—
Ramm, Jurgen; Daxinger, Helmut; Buhl, Rainer; and Bergmann, Erich, 5,192,578, Cl. 427-576.000.

Buhler, Marcel; Ho Dac, Thang; Hose, Hugh; and Wood, Robert D., to Nestec S.A. Preservation of vegetables and fruits. 5,192,565, Cl. 426-49.000.

Buhr, Gerhard: *See*—
Scheler, Siegfried; Buhr, Gerhard; and Bergmann, Klaus, 5,192,640, Cl. 430-169.000.

Bui, Nang T.: *See*—
Huang, Shu-Jen W.; Shetty, Chandrashekar S.; Bui, Nang T.; Dunn, Yvonne O.; Bhattacharyya, Uma; and Bhattacharyya, Bhupati R., 5,192,449, Cl. 210-712.000.

Bulat, Emel S.; and Herrick, Charles, to GTE Laboratories Incorporated. Field effect transistor and method of fabricating. 5,192,696, Cl. 437-27.000.

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Bull, David N.; Ozimek, Edward J.; and Tarn, Terry, to Eastman Kodak Company. Bonding of solid state device to terminal board. 5,192,835, Cl. 174-260.000.

Bull HN Information Systems Inc.: *See*—
Barlow, George J.; Keeley, James W.; Lemay, Richard A.; Shen, Jian-Kuo; Ledoux, Robert V.; Joyce, Thomas F.; Kelly, Richard P.; Miller, Robert C.; and Ledoux, Frances A., 5,193,181, Cl. 395-575.000.

Bunczek, Michael T.; and Urnezis, Philip W., to Wm. Wrigley Jr. Company. Aspartame stability in chewing gum using an acid gelatin system. 5,192,561, Cl. 426-3.000.

Burel, Jean-Pierre, to Merlin Gerin. Extended range neutron detection device for monitoring and control of nuclear reactors. 5,192,490, Cl. 376-154.000.

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Schnegg, Julius R., 5,191,777, Cl. 66-195.000.

Burndy Corporation: *See*—
Suffredini, Nino R.; and Anderson, James D., 5,192,233, Cl. 439-723.000.

Burnham, Alan K.: *See*—
Alonso, Carol T.; Bender, Donald A.; Bowman, Barry R.; Burnham, Alan K.; Chesnut, Dwayne A.; Comfort, William J., III; Guymon, Lloyd G.; Henning, Carl D.; Pedersen, Knud B.; Sefcik, Joseph A.; Smith, Joseph A.; and Strauch, Mark S., 5,191,940, Cl. 169-69.000.

Burnham, William L., to Eastman Kodak Company. Photographic film and cartridge. 5,192,648, Cl. 430-496.000.

Burns, James A., to Becton, Dickinson and Company. IV infusion or blood collection guard assembly. 5,192,275, Cl. 604-263.000.

Burpo, Gary D. Parallel jaw pliers with reinforced construction for symmetric force distribution. 5,191,816, Cl. 81-361.000.

Burri, Michel, to Motorola, Inc. Fault indicating microcomputer interface units. 5,193,177, Cl. 395-575.000.

Burrows, Bruce D., to Ebtech, Inc. Bottled water station with removable reservoir. 5,192,004, Cl. 222-146.100.

Burrows, Janine P.: *See*—
Guadagno, Philip A.; and Burrows, Janine P., 5,192,501, Cl. 422-56.000.

Burton, Albert F.; and Gislason, Stephen, to University of British Columbia, The. Method and composition for treatment of food allergy. 5,192,750, Cl. 514-62.000.

Buschmann, Ernst: *See*—
Zipperer, Bernhard; Goetz, Norbert; Buschmann, Ernst; Sproesser, Linhard; Ammermann, Eberhard; and Lorenz, Gisela, 5,192,767, Cl. 514-277.000.

Bussell, William R.; and Morgan, Nicholas S., to EKA Nobel Landskrona AB. Paper sizing compositions. 5,192,363, Cl. 106-218.000.

Bussiere, Raymond, to High-Line Manufacturing Inc. Agricultural frame for propulsion of ground working implements. 5,191,942, Cl. 172-286.000.

Butler, Bruce J. System for constructing storage containers for ready assembly and disassembly. 5,191,989, Cl. 220-4.340.

Buytendorp, Mark H.: *See*—
Hochlowski, Jill E.; Buytendorp, Mark H.; Chen, Randal H.; McAlpine, James B.; Theriault, Robert J.; Jackson, Marianna; and Karwowski, James P., 5,192,748, Cl. 514-25.000.

C.A. Lawton Company, The: *See*—
Buckley, Daniel T., 5,192,387, Cl. 156-275.500.

C.A. Weidmuller GmbH & Co.: *See*—
Jagiella, Manfred; Wiesemann, Wolf; and Holzmann, Michael, 5,192,847, Cl. 219-121.600.

Caffarella, Giuseppe, to Spaghetti Express S.r.l. Fast cooker of spaghettis, bucatinis, and the like. 5,191,829, Cl. 99-352.000.

Cahill, Stephen V.: *See*—
Walczak, Thomas J.; and Cahill, Stephen V., 5,193,223, Cl. 455-115.000.

Cahlander, Robert L.; Carroll, David W.; Hollingsworth, Alfred C.; Lawrence, Gregory A.; and Rudesill, Brian R., to Restaurant Technology, Inc. Food dispenser and method. 5,191,918, Cl. 141-1.000.

Caicedo, Oswald A., to Caicedo, Sylvia. Fraction illustrating polyhedron. 5,192,077, Cl. 273-155.000.

Caicedo, Sylvia: *See*—
Caicedo, Oswald A., 5,192,077, Cl. 273-155.000.

Caldwell, Colin S.; and Moeller, Helen H., to Babcock & Wilcox Company. Sic barrier overcoating and infiltration of fuel compact. 5,192,495, Cl. 376-417.000.

Calgon Corporation: *See*—
Gill, Patrick H., 5,192,451, Cl. 210-755.000.

Calhoun, Clyde D.: *See*—
Velasquez, David J.; Hodson, Peter D.; and Calhoun, Clyde D., 5,192,548, Cl. 424-443.000.

Callander, Michael A.: *See*—
Sanders, Douglas E.; and Callander, Michael A., 5,193,163, Cl. 395-425.000.

Calsonic Corp.: *See*—
Yajima, Kiyoshi; Suzuki, Takao; Itoh, Masanori; Okuyama, Hitoshi; Uruga, Ken-ichi; and Hirabayashi, Hisanaga, 5,192,940, Cl. 338-308.000.

Calvert, Michael A., to Prime Actuator Control Systems Limited. Actuator end stop arrangement. 5,191,808, Cl. 74-526.000.

Cammarano, Armando S.; DiGiacomo, Giulio; and DiPaolo, Nunzio, to International Business Machines Corporation. Low-cost ternary composite for use in via in glass-ceramic structures. 5,192,622, Cl. 428-551.000.

Campbell, Louis A.: *See*—
Budd, John C.; and Campbell, Louis A., 5,192,313, Cl. 623-2.000.

Campbell, Shannon K.: *See*—
Switzer, Robert C., III; Campbell, Shannon K.; and Murdock, Tere L., 5,192,688, Cl. 436-63.000.

Canada, Her Majesty the Queen in right of, as represented by the Province of Ontario: *See*—
Nayyar, Baldev K.; Kellner, Gabor; Pinchis, Peter; Martinek, Joseph; Ayuso, Anthony; and Weiss, Julius, 5,191,722, Cl. 34-12.000.

Canon Kabushiki Kaisha: *See*—
Amari, Takashi; and Shibaoka, Hideo, 5,193,147, Cl. 395-145.000.
Hanyu, Yukio; and Asaoka, Masanobu, 5,192,596, Cl. 428-1.000.
Honjo, Takeshi; and Murakami, Koichi, 5,192,261, Cl. 493-29.000.
Ishikawa, Yuji, 5,193,169, Cl. 395-425.000.
Kaneko, Tokuharu; Nakayama, Miho; Miyata, Masanori; Honjo, Takeshi; Adachi, Hideki; and Kanazawa, Toshiya, 5,192,977, Cl. 355-313.000.
Kawakami, Soichiro; Kanai, Masahiro; and Aoki, Takeshi, 5,192,717, Cl. 439-233.000.
Kimura, Atsushi; Seki, Hiroyuki; and Nishimoto, Yoshifumi, 5,192,890, Cl. 310-323.000.
Kitajima, Tadayuki; Naito, Masataka; Ueda, Noriyoshi; Hirai, Katsuaki; Honjo, Takeshi; Morishige, Yuji; and Yoshida, Akimaro, 5,192,976, Cl. 355-309.000.
Kuwabara, Tetsuo; and Murakami, Shuji, 5,192,352, Cl. 65-60.530.
Naruse, Yasuhiro; Momma, Genzo; and Yuzurihara, Hiroshi, 5,192,680, Cl. 437-81.000.
Ohmura, Satomi; and Kashizaki, Yoshio, 5,192,632, Cl. 430-58.000.
Smimizu, Katsuichi; Sawamura, Osamu; Masuda, Shunichi; Tomosada, Masahiro; and Sakamaki, Hisashi, 5,192,971, Cl. 355-206.000.
Tokumitsu, Jun; Yoshii, Minoru; Suda, Shigeyuki; and Sekine, Masayoshi, 5,192,998, Cl. 358-41.000.
Tsuchida, Shinji, 5,193,089, Cl. 370-84.000.
Umetsu, Sachio, 5,191,693, Cl. 29-429.000.
Umetsu, Sachio; and Miura, Toshihiko, 5,192,560, Cl. 425-175.000.
Yokoyama, Minoru; Awai, Takashi; Tomoda, Akihiro; Ishida, Yasushi; Terajima, Hisao; Ono, Takeshi; Yoshida, Takehiro; Wada, Satoshi; and Kobayashi, Makoto, 5,193,007, Cl. 358-296.000.

Cappi, Angelo; and Rimondi, Renato, to A.W.A.X. Progettazione e Ricerca S.r.l. Plastic bag dispensing apparatus for supermarkets incorporating devices for the registering of the purchased items. 5,191,749, Cl. 53-502.000.

Carbomedics, Inc.: *See*—
Budd, John C.; and Campbell, Louis A., 5,192,313, Cl. 623-2.000.

Cardarelli, Pina M.: *See*—
Lobl, Thomas J.; Chiang, Shiu-Lan; and Cardarelli, Pina M., 5,192,746, Cl. 514-11.000.

Cardinal, Marcel E. Mobile harvester for hay bales. 5,192,177, Cl. 414-501.000.

Cargnel, Robert A.; and Morran, James R., to Aluminum Company of America. Pin attachment tool and method of capacitive brazing. 5,192,843, Cl. 219-56.220.

Carl, Willie, to ABB Vetco Gray Inc. Unidirectional seat seal for gate valve. 5,192,051, Cl. 251-328.000.

Carlson, James J.; and Noyes, Gary R., to Hughes Aircraft Company. Optical viewing and near infrared tracking system for a portable missle launcher. 5,193,025, Cl. 359-356.000.

Carpenter, Gene C.: *See*—
Kress, Edward S.; and Carpenter, Gene C., 5,192,398, Cl. 202-227.000.

Carpenter, Howard A.: *See*—
Edgren, David E.; Carpenter, Howard A.; Bhatti, Gurdish K.; and Ayer, Atul D., 5,192,550, Cl. 424-473.000.

Carroll, David W.: *See*—
Cahlander, Robert L.; Carroll, David W.; Hollingsworth, Alfred C.; Lawrence, Gregory A.; and Rudesill, Brian R., 5,191,918, Cl. 141-1.000.

Carroll, John F., Jr., to Eastman Kodak Company. Thermoformable sheet material. 5,192,609, Cl. 428-328.000.

Carroll, Larry W.: *See*—
Roberts, Marc W., 5,192,109, Cl. 296-84.100.

Carswell, Donald D., Jr. Hypodermic syringe and a method for marking injections. 5,192,270, Cl. 604-116.000.

Carter, Carl W.: *See*—
Bargfrede, Brent C.; Carter, Carl W.; Neal, James G.; and Purcell, Robert J., 5,191,951, Cl. 180-9.100.

Cartmell, James V., to NDM Acquisition Corp. Assembly for dispensing tab electrodes. 5,191,887, Cl. 128-640.000.

Cartwright, Mont J.; and Nelson, Christine C., to University Of Michigan, The Regents Of The. Drill guide for orbital implant. 5,192,293, Cl. 606-172.000.
Carver, Glyn: *See*—
Ausavich, Timothy C.; Gohr, Kevin P.; and Carver, Glyn, 5,191,843, Cl. 108-56.300.
Case Corporation: *See*—
Fachini, Robert L.; Walser, Kenneth D.; Chance, John H.; and Miller, Daniel A., 5,191,757, Cl. 56-30.000.
Fachini, Robert M.; Chance, John H.; Miller, Daniel A.; and Brandt, David, 5,191,753, Cl. 56-10.900.
Francis, Robert L.; and Minnihan, James W., 5,192,245, Cl. 460-71.000.
Frzncis, Robert L.; and Minnihan, James W., 5,192,246, Cl. 460-72.000.
Cashco, Inc.: *See*—
Ridge, William A., 5,192,049, Cl. 251-214.000.
Caskey, Terrence L., to Dow Chemical Company, The. Method of forming tubesheet for hollow fibers. 5,192,478, Cl. 264-139.000.
Cassaday, Michael M., to Technicon Instruments Corporation. Flushable low carryover container. 5,192,504, Cl. 422-64.000.
Cassell, Allan J. Recirculating chilling apparatus with a submerged electric motor and impeller. 5,191,773, Cl. 62-373.000.
Cassella Aktiengesellschaft: *See*—
Zoller, Gerhard; and Schindler, Ursula, 5,192,795, Cl. 548-423.000.
Caterpillar Inc.: *See*—
Bargfrede, Brent C.; Carter, Carl W.; Neal, James G.; and Purcell, Robert J., 5,191,951, Cl. 180-9.100.
Dam, Chuong Q.; Hester, Virgil R.; Kelley, Kurtis C.; and Towe, Carey A., 5,191,687, Cl. 29-25.350.
Glassey, Stephen F., 5,191,867, Cl. 123-446.000.
Guerindon, Pierre C.; and Barrow, Jon E., 5,193,065, Cl. 364-468.000.
Satzler, Ronald L.; and Schmillen, Edward E., 5,191,952, Cl. 180-9.520.
Catlin, David: *See*—
Bhate, Anandkumar; and Catlin, David, 5,192,296, Cl. 606-194.000.
Catullo, William J., Jr.: *See*—
Erin, Lawrence E.; Catullo, William J., Jr.; Paris, Richard E.; and Gallagher, John M., 5,192,493, Cl. 376-211.000.
Cavazza, Claudio, to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A. Use of acetyl L-carnitine in the therapeutic treatment of coma. 5,192,805, Cl. 514-556.000.
Cavin, Michael G., to Graphite Design and Detail, Incorporated. Method for continuously forming composite material into a rigid structural member. 5,192,383, Cl. 156-180.000.
CBS Scientific, Inc.: *See*—
Scott, Charles B., 5,192,408, Cl. 204-182.800.
Cedarapids, Inc.: *See*—
Musil, Joseph E., 5,192,204, Cl. 431-10.000.
Cellcor Inc.: *See*—
Osband, Michael E., 5,192,537, Cl. 424-85.200.
Celotex Corporation, The: *See*—
Soukup, Thomas G., 5,192,607, Cl. 428-314.400.
Centre National de la Recherche Scientifique: *See*—
Bastie, Pierre; and Hamelin, Bernard, 5,193,104, Cl. 378-73.000.
Centre National de la Recherche Scientifique (CNRS): *See*—
Bourdillon, Christian; Moiroux, Jacques; Bonnefoy, Jacques P. B.; and Laval, Jean-Marc, 5,192,687, Cl. 435-280.000.
Cetac Technologies Inc.: *See*—
Zhu, Jianzhong, 5,192,865, Cl. 250-288.000.
Cezana, Haim; and Savage, Donald C., to Stryker Corporation. Surgical apparatus useable for arthroscopic surgery. 5,192,292, Cl. 606-170.000.
Chamberlin, George P.; and Qureshi, Shahid U. H., to Codex Corporation. Processor interface circuitry for effecting data transfers between processors. 5,193,204, Cl. 395-800.000.
Chan, Darrell W.: *See*—
Vander Vegt, Stanley J.; and Chan, Darrell W., 5,193,207, Cl. 395-800.000.
Chan, Dominic M.; and LeStrange, Raymond J., to Du Pont de Nemours, E. I., and Company. Silver halide elements with improved speed and low fog. 5,192,655, Cl. 430-600.000.
Chan, Man: *See*—
Lunn, Gerald K.; Chan, Man; and Lin, Chi M., 5,193,217, Cl. 455-79.000.
Chance, James L., to Beloit Technologies, Inc. Short dwell coater apparatus. 5,192,591, Cl. 427-356.000.
Chance, John H.: *See*—
Fachini, Robert L.; Walser, Kenneth D.; Chance, John H.; and Miller, Daniel A., 5,191,757, Cl. 56-30.000.
Fachini, Robert M.; Chance, John H.; Miller, Daniel A.; and Brandt, David, 5,191,753, Cl. 56-10.900.
Chandrasekaran, Santosh K.: *See*—
Davis, Jeffrey P.; Chandrasekaran, Santosh K.; Su, Yansheng; Archibald, Roy D.; and Robinson, Joseph R., 5,192,535, Cl. 424-78.040.
Chaney, Ross P. Heat regenerator. 5,191,930, Cl. 165-4.000.
Chang, Chin L.; Niebauer, Daniel A.; and Choi, Albert, to Litton Systems, Inc. Process for making multifunction integrated optics chips having high electro-optic coefficients. 5,193,136, Cl. 385-129.000.
Chang, Fong C. Control device for a water tank. 5,191,661, Cl. 4-324.000.
Chang, Fu-Kuo; Reifnider, Kenneth; Davidson, James A.; and Georgette, Frederick S., to Smith & Nephew Richards, Inc. Orthopedic device of biocompatible polymer with oriented fiber reinforcement. 5,192,330, Cl. 623-22.000.
Chang, I-Chia H.; and Horkans, Wilma J., to International Business Machines Corporation. Cyclic voltammetric method for the measurement of concentrations of subcomponents of plating solution additive mixtures. 5,192,403, Cl. 204-153.100.
Chang, Jikuo; and Blanck, Robert G., to Koch Membrane Systems, Inc. Spiral filtration module with improved cleanability and operating efficiency. 5,192,437, Cl. 210-321.830.
Chang, Ming C., to Taiwan Geni Electronics Co., Ltd. Synchronously-controlled light string. 5,192,895, Cl. 315-201.000.
Chang, Shau-Gan; Charlton, Linda L.; Gottneid, Jane D.; and Abbas, Ibrahim R., to American Maize-Products Company. Thick-thin retort starch. 5,192,576, Cl. 426-578.000.
Chang, Wunan: *See*—
Kroll, Arthur S.; and Chang, Wunan, 5,192,972, Cl. 355-208.000.
Chanois, Louis M. J., to Stop Circuit. Electrical current interrupter. 5,193,041, Cl. 361-13.000.
Chantry, Peter J.; Weinert, Robert W.; Tallisa, Salvador H.; McAvoy, Bruce R.; and Smith, Thomas J., Jr., to Westinghouse Electric Corp. Miniaturized atomic frequency standard. 5,192,921, Cl. 331-3.000.
Chapura, Francis B.; and Mitra, Sekhar, to Procter & Gamble Company, The. Swallowable pharmaceutical compositions containing Colloidal Bismuth Subcitrate. 5,192,752, Cl. 514-152.000.
Chardon, Jerome, to Jaeger. Obstacle detector system including an improved connection assembly. 5,192,837, Cl. 200-61.410.
Charlton, Linda L.: *See*—
Chang, Shau-Gan; Charlton, Linda L.; Gottneid, Jane D.; and Abbas, Ibrahim R., 5,192,576, Cl. 426-578.000.
Charnitski, George A., to Xerox Corporation. Method and apparatus to control overall write length in LED print bars. 5,192,958, Cl. 346-107.00R.
Chartered Semiconductor Manufacturing PTE Ltd.: *See*—
Leong, Joe H. K., 5,192,697, Cl. 437-37.000.
Chatani, Yoji: *See*—
Araki, Nobuo; Kagami, Takeji; Chatani, Yoji; Kikuta, Shunichi; Yamada, Iwao; Kamada, Masao; Hashimoto, Seiji; Ueno, Shuichi; Fukui, Takeshi; Nakamura, Takumi; Mizuhashi, Nobuo; and Ishikawa, Yasushi, 5,192,016, Cl. 228-147.000.
Chatterjee, Deb K.; and Hammond, Alan W., to Life Technologies, Inc. Cloned KpnI restriction-modification system. 5,192,675, Cl. 435-199.000.
Chechik, Rachel: *See*—
Breskin, Amox; Chechik, Rachel; and Majewski, Stanislaw, 5,192,861, Cl. 250-214.0VT.
Chen, Chia-Chung; and Lo, Ray J., to Imperial Chemical Industries plc. Elimination of sulfide odor in thiocarbamate herbicides. 5,192,498, Cl. 422-5.000.
Chen, John C.: *See*—
Coates, Don M.; McMillin, Carl K.; and Chen, John C., 5,192,468, Cl. 264-13.000.
Chen, Randal H.: *See*—
Hochlowski, Jill E.; Buytendorp, Mark H.; Chen, Randal H.; McAlpine, James B.; Theriault, Robert J.; Jackson, Marianna; and Karwowski, James P., 5,192,748, Cl. 514-25.000.
Chen, Shu-Hui; and Farina, Vittorio, to Bristol-Myers Squibb Company. Fluoro taxols. 5,192,796, Cl. 514-449.000.
Chen, Tienteh: *See*—
Merkel, Paul B.; Schofield, Edward; and Chen, Tienteh, 5,192,646, Cl. 430-377.000.
Cheng, Yung-Chi; Lin, Tai-Shun; and Bardos, Thomas J., to Research Foundation of State of N.Y.; and Yale University. Pyrazinone N-oxide nucleosides and analogs thereof. 5,192,764, Cl. 514-252.000.
Cheol, Joung L., to Samsung Electronics Co., Ltd. Filter assembly. 5,192,347, Cl. 55-359.000.
Cherpeck, Richard E., to Chevron Research and Technology Company. Fuel additive compositions containing poly(oxyalkylene) amines and polyalkyl hydroxyaromatics. 5,192,335, Cl. 44-387.000.
Cherry, Robert W.: *See*—
Alcorn, Byron A.; Cherry, Robert W.; Coleman, Mark D.; and Rauchfuss, Brian D., 5,193,148, Cl. 395-157.000.
Cherry Semiconductor Corporation: *See*—
Gontoswki, Walter S., Jr., 5,192,901, Cl. 318-430.000.
Chesebrough-Pond's USA Co., Division of Conopco, Inc.: *See*—
Elliott, David L.; and Patrick, Esther, 5,192,533, Cl. 424-54.000.
Garlick, Theodore H., Jr.; and Miner, Philip E., 5,192,529, Cl. 424-49.000.
Chesnut, Dwayne A.: *See*—
Alonso, Carol T.; Bender, Donald A.; Bowman, Barry R.; Burnham, Alan K.; Chesnut, Dwayne A.; Comfort, William J., III; Guymon, Lloyd G.; Henning, Carl D.; Pedersen, Knud B.; Sefcik, Joseph A.; Smith, Joseph A.; and Strauch, Mark S., 5,191,940, Cl. 169-69.000.
Cheung, Chan K.: *See*—
Yeung, Edward S.; Koutny, Lance B.; Hogan, Barry L.; Cheung, Chan K.; and Ma, Yinfa, 5,192,407, Cl. 204-182.800.
Chevron Research and Technology Company: *See*—
Cherpeck, Richard E., 5,192,335, Cl. 44-387.000.
Chiang, Shiu-Lan: *See*—
Lobl, Thomas J.; Chiang, Shiu-Lan; and Cardarelli, Pina M., 5,192,746, Cl. 514-11.000.
Chiba, Kiyoshi: *See*—
Sekiya, Masahiko; Ishizaki, Takayuki; and Chiba, Kiyoshi, 5,192,626, Cl. 428-694.000.

Chien-Yeh Lee, William, to PacTel Corporation. Zoned microcell with sector scanning for cellular telephone system. 5,193,109, Cl. 379-60.000.

Children's Hospital of Pennsylvania, The: *See*—
Zasloff, Michael; Moore, Karen; and Wehrli, Suzanne, 5,192,756, Cl. 514-182.000.

Chillarege, Ram; and Rosenfeld, Philip L., to International Business Machines Corporation. Self-testing probe system to reveal software errors. 5,193,178, Cl. 395-575.000.

Chinoin Gyogyszer es Vegyeszeti Termekek Rt.: *See*—
Szekely, Istvan; Szego, Andras; Pap, Laszio; Nagy, Lajos; Kollarik nee Hasek, Viktoria; Marmarosi nee Kellner, Katalin; Karadi, Zoltan; Toth, Andrea; and Szucsany, Gyorgy, 5,192,793, Cl. 514-421.000.

Chisso Corporation: *See*—
Konotsune, Shiro; Kikuta, Kazutsune; Uetsuki, Masaya; and Hase, Hiroaki, 5,192,619, Cl. 428-458.000.

Chiu, Anthony M., to Texas Instruments Incorporated. Low cost erasable programmable read only memory package. 5,192,681, Cl. 437-217.000.

Chlystek, Michael W.: *See*—
Fishovitz, Anthony J.; Heberling, Allan V.; Fogle, Thomas K.; and Chlystek, Michael W., 5,192,941, Cl. 340-638.000.

Choi, Albert: *See*—
Chang, Chin L.; Niebauer, Daniel A.; and Choi, Albert, 5,193,136, Cl. 385-129.000.

Choi, Jun K.; Choi, Mun K.; Kim, Kyung S.; Jeong, Tae S.; and Shin, Young S., to Electronics and Telecommunications Research Institute. High speed ATM cell synchronizing switching apparatus. 5,193,088, Cl. 370-60.000.

Choi, Mun K.: *See*—
Choi, Jun K.; Choi, Mun K.; Kim, Kyung S.; Jeong, Tae S.; and Shin, Young S., 5,193,088, Cl. 370-60.000.

Chon, Hai-jong H. FM broadcast band subcarrier receiver. 5,193,213, Cl. 455-45.000.

Chou, Chia-Li, to Quarton, Inc. Diode laser collimatting device. 5,193,099, Cl. 372-107.000.

Christiaens, Alois E., to U.S. Philips Corporation. Device for rotating a disc-shaped information carrier including a turntable and frame. 5,193,084, Cl. 369-258.000.

Christie, Michael J.; DeCarlo, Alfred F., Jr.; McTighe, Timothy; and Noiles, Douglas G., to Joint Medical Products Corporation. Oblong acetabular cup. 5,192,329, Cl. 623-22.000.

Chu, Muren: *See*—
Wang, Cheng-Chi; Liu, Yet-Zen; and Chu, Muren, 5,192,695, Cl. 437-5.000.

Chu, Shaw-Chang; and Johnson, James A., to Mobil Oil Corporation. Metallized composite film structure and method. 5,192,620, Cl. 428-461.000.

Chung, Dae B.; Suh, Sung S.; and Kwak, Chun S., to LUCKY Ltd. Disposable absorbent article. 5,192,277, Cl. 604-360.000.

Chung, T. Mark; Orchard, Anthony G.; Baker, William H.; and Bradford, Charles L., to Tidemark Corporation. Multi-dimensional media printer with media based registration and free edge printing. 5,192,141, Cl. 400-56.000.

Chusid Pty. Ltd.: *See*—
Bolton, John G., 5,191,837, Cl. 101-333.000.

Ciavaglia, Stephen J.: *See*—
Barbour, Russell G.; Soeder, Carl A.; and Ciavaglia, Stephen J., 5,193,157, Cl. 395-375.000.

Ciba-Geigy Corporation: *See*—
Karrer, Friedrich, 5,192,803, Cl. 514-539.000.
Steiner, Eginhard; Beyeler, Harry; Riediker, Martin; Desobry, Vincent; Dietliker, Kurt; and Husler, Rinaldo, 5,192,642, Cl. 430-281.000.

CID Asaoicates, Inc.: *See*—
Romig, Frederick W.; and Ledford, Charles D., 5,191,742, Cl. 52-79.900.

Ciniglio, Alexander J.; and Squire, Neil C., to Pillarhouse International Limited. Dip soldering apparatus. 5,192,014, Cl. 228-34.000.

Citizen Watch Co., Ltd.: *See*—
Aoki, Yasushi; Azuma, Masaaki; Tsuchigane, Shigeo; Tanaka, Akihiro; Hirayama, Katsuzo; and Tanaka, Eiichiro, 5,191,685, Cl. 24-656.000.

Clark, David R.: *See*—
McDavid, James M.; and Clark, David R., 5,192,704, Cl. 437-52.000.

Clark, George W.; and List, Jens L., Jr., to Sonic Electric, Inc. Electrical cable termination. 5,192,229, Cl. 439-604.000.

Clark, Paul H.: *See*—
Awiszio, Desiree A.; Soman, Satish; and Clark, Paul H., 5,193,149, Cl. 395-200.000.

Clark, Richard N.: *See*—
Wotring, Randall C.; and Clark, Richard N., 5,192,042, Cl. 248-176.000.

Clark, Robin D.; Eglen, Richard M.; Muchowski, Joseph M.; Smith, William L.; and Weinhardt, Klaus K., to Syntex (U.S.A.) Inc. Serotonergic alpha-oxoacetamides. 5,192,770, Cl. 514-305.000.

Clay, Haile S. Self-contained household garbage incinerator. 5,191,846, Cl. 110-346.000.

Clecim: *See*—
Werquin, Dominique, 5,191,924, Cl. 164-418.000.

Cleland, Robert K. Liquid actuated switch device. 5,191,999, Cl. 222-56.000.

Clevenger, James T., Jr., to Ford New Holland, Inc. Roll stripping apparatus for round baler. 5,191,833, Cl. 100-88.000.

Cliff, Geoffrey R.; and Richards, Ian C., to Schering Agrochemicals Limited. Acrylate fungicides. 5,192,357, Cl. 504-315.000.

Cline, Harvey E.: *See*—
Hardy, Christopher J.; Bottomley, Paul A.; and Cline, Harvey E., 5,192,909, Cl. 324-309.000.

Clivus Multrum, Inc.: *See*—
Lindstrom, Carl R., 5,192,428, Cl. 210-143.000.

CMB Foodcan plc: *See*—
Pavely, Andrew P.; Marr, Roy J.; Foskett, Peter S.; and White, David M., 5,191,695, Cl. 29-451.000.

CNS, Inc.: *See*—
Reiten, Denise M., 5,191,893, Cl. 128-721.000.

Coates, Don M.; McMillin, Carl K.; and Chen, John C., to Du Pont de Nemours, E. I., and Company. Process for flash spinning fiber-forming polymers. 5,192,468, Cl. 264-13.000.

Coates, Nigel J.; Sykes, Rachel; Davis, Christopher J.; and Curtis, Lawrence M., to Beecham Group PLC. Compounds and compositions for the treatment of bacterial infections in animals. 5,192,742, Cl. 514-8.000.

Cobb, Raymond L.: *See*—
Farris, David D.; Reedy, James D.; and Cobb, Raymond L., 5,192,812, Cl. 521-112.000.

Coca-Cola Company, The: *See*—
Wandrick, Lisa C.; Hoover, George H.; Whigham, Roger C.; and Bearden, John H., 5,192,000, Cl. 222-59.000.

Codex Corporation: *See*—
Chamberlin, George P.; and Qureshi, Shahid U. H., 5,193,204, Cl. 395-800.000.

Coelho, Eduardo J. J.: *See*—
da Silva, Jose E. M.; Paulo, Cezar A.; Santos Filho, Amauri G.; and Coelho, Eduardo J. J., 5,192,167, Cl. 405-195.100.

Cohen, Richard E.: *See*—
Jones, Scott A.; Arumainayagam, Allen T.; Mukherjee, Amitava; Picard, Donald F.; and Cohen, Richard E., 5,193,110, Cl. 379-94.000.

Colclaser, Robert G., III: *See*—
Matty, Thomas C.; Colclaser, Robert G., III; and Hitchins, Gary O., 5,193,111, Cl. 379-106.000.

Cole, Edward H., Jr.; and Mott, Philip J., to Borg-Warner Automotive Transmission & Engine Components Corporation. Single pin rocker joint chain. 5,192,253, Cl. 474-214.000.

Coleman, Mark D.: *See*—
Alcorn, Byron A.; Cherry, Robert W.; Coleman, Mark D.; and Rauchfuss, Brian D., 5,193,148, Cl. 395-157.000.

Colgate-Palmolive Company: *See*—
Gaffar, Abdul; Nabi, Nuran; Afflitto, John; and Stringer, Orum, 5,192,530, Cl. 424-52.000.
Gaffar, Abdul; Nabi, Nuran; Afflitto, John; Stringer, Orum; and Prencipe, Michael, 5,192,531, Cl. 424-52.000.
Thomas, Michel; Blandiaux, Genevieve; and Valange, Baudouin, 5,192,460, Cl. 252-142.000.

Collins, Henry B.; Mosser, Benjamin H., III; and Smith, Steven G., to AMP Inc. Shielded surface mount electrical connector with integral barbed board lock. 5,192,228, Cl. 439-567.000.

Colorado State University Research Foundation: *See*—
Orton, E. Christopher, 5,192,312, Cl. 623-2.000.

Colpaert, Francis: *See*—
Malen, Charles; de Nanteuil, Guillaume; and Colpaert, Francis, 5,192,775, Cl. 514-321.000.

Columbia University in the City of New York, The Trustees of: *See*—
Wang, Feng Ming; and Anastassiou, Dimitris, 5,193,004, Cl. 358-136.000.

Colwell, Lawrence F., Jr.: *See*—
Treiber, Laszlo R.; Colwell, Lawrence F., Jr.; Arison, Byron H.; Dezeny, Georgette; Lingham, Russell B.; Thompson, Wayne J.; and Balani, Suresh K., 5,192,668, Cl. 435-41.000.

Combe Incorporated: *See*—
Lapidus, Herbert, 5,192,333, Cl. 8-405.000.

Combi Corporation: *See*—
Ishikura, Takashi, 5,191,675, Cl. 16-35.00R.

Comfort, William J., III: *See*—
Alonso, Carol T.; Bender, Donald A.; Bowman, Barry R.; Burnham, Alan K.; Chesnut, Dwayne A.; Comfort, William J., III; Guymon, Lloyd G.; Henning, Carl D.; Pedersen, Knud B.; Sefcik, Joseph A.; Smith, Joseph A.; and Strauch, Mark S., 5,191,940, Cl. 169-69.000.

Commandeur, Raymond: *See*—
Berger, Noelle; Commandeur, Raymond; and Jay, Pierre, 5,192,463, Cl. 252-570.000.

Commonwealth Scientific and Industrial Research Organisation: *See*—
Waugh, Allan B.; and Bowling, Keith M., 5,192,338, Cl. 44-627.000.

Commonwealth Scientific and Industrial Research Organization and Welding Industries Limited: *See*—
James, Horace S. B.; and French, Ian E., 5,192,851, Cl. 219-130.510.

Compaq Computer Corporation: *See*—
Silvestri, James T.; Podhaisky, Todd D.; Klein, Timothy E.; Baker, Mark W.; and Czarnek, David J., 5,192,152, Cl. 400-679.000.

Compuadd Corporation: *See*—
Graczyk, Ronald B.; Glick, James A.; and Engberg, Daniel K., 5,192,999, Cl. 358-85.000.

Comroe, Richard A.: *See*—
McDonald, James A.; Comroe, Richard A.; Sobti, Arun; Bocci, Paul M.; Furtaw, Robert W.; and Hiben, Bradley M., 5,193,101, Cl. 375-1.000.

Conforti, Fred J., to Pittway Corporation. Battery missing indicator. 5,191,855, Cl. 116-280.000.

Conley Casting Supply Corp.: *See*—
Goss, Douglas J., 5,191,923, Cl. 164-292.000.
Conlon, Patrick R.: *See*—
Boggs, Roger A.; Borror, Alan L.; Conlon, Patrick R.; Cournoyer, Richard L.; Ellis, Ernest W.; and Waller, David P., 5,192,645, Cl. 430-338.000.
Conner Peripherals, nc.: *See*—
Lemke, James U.; French, William W.; and McHargue, William B., 5,193,046, Cl. 360-97.020.
Considine, Vincent: *See*—
Singh, Bhajan; and Considine, Vincent, 5,193,103, Cl. 375-120.000.
Consolidated Natural Gas Service Company, Inc.: *See*—
Swenson, Paul F., 5,192,022, Cl. 237-2.00B.
Consolidated Rail Corporation: *See*—
Tinkler, Robert W., 5,191,842, Cl. 105-355.000.
Consolidation Edison Company of New York, Inc.: *See*—
Gately, Daniel M.; Zezza, Louis J.; and Masetti, William R., 5,192,492, Cl. 376-203.000.
Continental Baking Company: *See*—
Abdelrahman, Abdel, 5,192,564, Cl. 426-19.000.
Continental Plastic Containers, Inc.: *See*—
Blomquist, Leonard A., 5,192,007, Cl. 222-376.000.
Continental Wholesale Florists, Inc.: *See*—
Cote, Jean P., 5,191,758, Cl. 56-329.000.
Contreras, Patricia C.: *See*—
Gray, Nancy M.; and Contreras, Patricia C., 5,192,762, Cl. 514-249.000.
Cook, Edward J.: *See*—
Taylor, Richard F.; Marenchic, Ingrid G.; and Cook, Edward J., 5,192,507, Cl. 422-68.100.
Cook, Fred R., Sr., to Texaco Inc. Offshore well remote control system. 5,191,937, Cl. 166-363.000.
Cook, John E., to Siemens Automotive Limited. Diagnostic system for canister purge system. 5,191,870, Cl. 123-520.000.
Cook, Paul E.: *See*—
Schuermeyer, Fritz L.; Cook, Paul E.; Martinez, Edgar J.; and Martinez, Marino J., 5,192,698, Cl. 437-40.000.
Cooper, Gary L. Multi-blade arrowhead. 5,192,081, Cl. 273-422.000.
Cooper, Paul; and Sloteman, Donald P., to Ingersoll-Dresser Pump Company. Impeller for centrifugal pumps. 5,192,193, Cl. 416-186.00R.
Cooper, Robert D., Jr.: *See*—
Cyphers, Norman A.; Straight, Dwaine D.; and Cooper, Robert D., Jr., 5,192,425, Cl. 210-90.000.
Cooper, Thomas P.: *See*—
Bordsen, Donald T.; Cooper, Thomas P.; Esson, Robert F.; Hill, Michael J.; Jordan, John R.; Kessler, James E.; Konrad, Dennis R.; Sipple, Ralph E.; Swenson, Robert E.; Torgerson, James F.; and vonArx, Anthony P., 5,193,162, Cl. 395-425.000.
Copeland, Jeffrey P.: *See*—
Velasco, Daniel J. J.; Robinson, Dennis C.; Copeland, Jeffrey P.; and Fernandez, Ricardo L., 5,192,893, Cl. 315-85.000.
Copper, Charles M.: *See*—
Grey, Ronald T.; Patel, Mansukh M.; and Copper, Charles M., 5,192,562, Cl. 426-4.000.
Corbin, Linn N. Drill adapter. 5,191,666, Cl. 7-158.000.
Corcoran, Edward W., Jr.; and Vaughan, David E. W., to Exxon Research and Engineering Company. Substituted stannosilicates and preparation thereof. 5,192,519, Cl. 423-713.000.
Cordis Corporation: *See*—
Palmer, Matthew; Starkey, John J.; and Viera, Fernando M., 5,191,888, Cl. 128-657.000.
Cornell Research Foundation Inc.: *See*—
Kinsella, John E.; Gusek, Todd W.; and Wilson, David B., 5,192,677, Cl. 435-220.000.
Cornett, Kenneth D.: *See*—
Ramakrishnan, E. S.; Cornett, Kenneth D.; and Howng, Wei-Yean, 5,192,871, Cl. 257-595.000.
Corning Incorporated: *See*—
Araujo, Roger J.; and Love, Walter F., 5,192,402, Cl. 204-130.000.
Danielson, Paul S., 5,192,718, Cl. 501-60.000.
Trentelman, Jackson P., 5,192,353, Cl. 65-66.000.
Cornuejols, Georges, to Scanera S.G. Non-linear device for amplifying the intensities of light rays that produce an image. 5,193,016, Cl. 359-53.000.
Correa, Sanjay M., to General Electric Company. Method for low nitrogen oxide combustion in supersonic transports. 5,192,516, Cl. 423-235.000.
Corrigan, Michael J.; Freeman, Harris L.; and Gorbatenko, George G., to International Business Machines Corporation. Multiprocessing system with enhanced shared storage. 5,193,168, Cl. 395-425.000.
Cosden, Marvin P., to Delmarva Sash & Door Company of Maryland, Inc. Machine and method for attaching casing to a structural frame assembly. 5,191,706, Cl. 29-787.000.
Costa, Peter F.: *See*—
Thompson, Todd; Kloeckl, Terrance; Costa, Peter F.; Holmes, William A.; and Daulton, Jay, 5,192,288, Cl. 606-143.000.
Costarica Sogo Kaihatsu Co., Ltd.: *See*—
Tsukamoto, Kenkichi, 5,191,905, Cl. 131-332.000.
Cote, Jean P., to Continental Wholesale Florists, Inc. Method and apparatus for nut harvesting. 5,191,758, Cl. 56-329.000.
Cotic, Dennis J.; and Hosking, Jack K., to Oak Industries, Inc. Spike driving machine having pushing and percussive spike driving functions. 5,191,840, Cl. 104-17.100.
Counts, Reginald D. System for electronically recording and redeeming coupons. 5,192,854, Cl. 235-375.000.
Cournoyer, Richard L.: *See*—
Boggs, Roger A.; Borror, Alan L.; Conlon, Patrick R.; Cournoyer, Richard L.; Ellis, Ernest W.; and Waller, David P., 5,192,645, Cl. 430-338.000.
Courtaulds Coatings Inc.: *See*—
Slater, William W.; Kelly, John; and Winter, Michael J., 5,192,603, Cl. 428-217.000.
Cox, James M.: *See*—
Scott, Gerald R.; and Cox, James M., 5,192,306, Cl. 606-243.000.
Cox, James P.; and Cox, Jeanne M. Whole poultry egg analogue composition and method. 5,192,566, Cl. 428-89.000.
Cox, Jeanne M.: *See*—
Cox, James P.; and Cox, Jeanne M., 5,192,566, Cl. 428-89.000.
Cozzolino, Roberto: *See*—
Giannessi, Fabio; Ghirardi, Orlando; Misiti, Domenico; Tinti, Maria O.; and Cozzolino, Roberto, 5,192,759, Cl. 514-212.000.
Cozzone, Glenn E.: *See*—
Jones, C. Andrew; Gaffney, Anne M.; Leyshon, David W.; Cozzone, Glenn E.; and Sofranko, John A., 5,192,809, Cl. 521-40.000.
CPF Chemical Equipment Ltd.: *See*—
Kidd, John A.; Hoa, Swong V.; and Janardhanam, Ramesh, 5,191,785, Cl. 73-49.200.
Craft, Barrie G.; Doll, Peter; and Martin, Frank. Vehicle modular clutch attaching arrangement. 5,191,810, Cl. 74-572.000.
Craft, Roger L.: *See*—
VanDalsem, John H.; and Craft, Roger L., 5,192,058, Cl. 269-24.000.
Craig, Alan R.: *See*—
Zoha, Steven J.; Davis, James E.; Craig, Alan R.; and Hochberg, Alan M., 5,192,510, Cl. 422-82.050.
Craig, Marion N., to Roadmaster Corporation. Exercise bicycle flywheel. 5,191,809, Cl. 74-572.000.
Crain, James R.: *See*—
Tomaszewski, Lillie C.; and Crain, James R., 5,192,461, Cl. 252-156.000.
Creighton, John E.; and Rheaume, Leo, to W. R. Grace & Co.- Conn. Hydroprocessing catalyst composition. 5,192,734, Cl. 502-314.000.
Crenn, Yves: *See*—
Gysin, Jurg; Crenn, Yves; Pereira da Silva, Luiz; and Breton, Catherine, 5,192,807, Cl. 514-563.000.
Crisler, Kenneth J.; Hiben, Bradley M.; and Van den Heuvel, Anthony, to Motorola, Inc. TDM communication system for a wide area site and a plurality of local sites. 5,193,091, Cl. 370-95.100.
Croda Inc.: *See*—
Gloor, Guy J.; Gallagher, Kevin F.; and Pereira, Abel G., 5,192,462, Cl. 252-174.210.
Crook, Alan; Oglesby, Oliver D.; and Oldroyd, Brian, to Gillette Company, The. Safety razors and guards. 5,191,712, Cl. 30-34.200.
Crook, Arthur Kirkham: *See*—
Higginson, Barry, 5,192,159, Cl. 404-11.000.
Cross, Peter E.: *See*—
Alker, David; Bass, Robert J.; and Cross, Peter E., 5,192,765, Cl. 514-255.000.
Crowninshield, Roy D.: *See*—
Shetty, H. Ravindranath; Ottersberg, Walter H.; Parr, Jack E.; and Crowninshield, Roy D., 5,192,323, Cl. 623-16.000.
Crystal Technology, Inc.: *See*—
Bordui, Peter F.; Norwood, Richard G.; and Blachman, Ronald, 5,193,097, Cl. 372-21.000.
Culp, Gordon W., to Rockwell International Corporation. Piezoelectric pump. 5,192,197, Cl. 417-322.000.
Cummings, Michael D.: *See*—
Hill, Howard D. W.; and Cummings, Michael D., 5,192,911, Cl. 324-322.000.
Cummins Engine Company, Inc.: *See*—
Rix, David M.; and Yingling, Christine M., 5,192,026, Cl. 239-533.300.
Curran, Steven P., to Kansas State University Research Foundation. Simplified method and apparatus for producing white flour from wheat grain. 5,192,028, Cl. 241-3.000.
Curtis, Lawrence M.: *See*—
Coates, Nigel J.; Sykes, Rachel; Davis, Christopher J.; and Curtis, Lawrence M., 5,192,742, Cl. 514-8.000.
Cutts, Richard W., Jr.; Norwood, Peter C.; DeBacker, Kenneth C.; Mehta, Nikhil A.; Jewett, Douglas E.; Allison, John D.; and Horst, Robert W., to Tandem Computers Incorporated. Fault-tolerant computer with three independently clocked processors asynchronously executing identical code that are synchronized upon each voted access to two memory modules. 5,193,175, Cl. 395-575.000.
Cybex Corporation: *See*—
Asprey, Robert R.; and Shatas, Remigius G., 5,193,200, Cl. 395-800.000.
Cyphers, Norman A.; Straight, Dwaine D.; and Cooper, Robert D., Jr., to Wagner Spray Tech Corporation. Mounting base and assembly for pressure sensor, filter and pressure relief valve. 5,192,425, Cl. 210-90.000.
Czarnek, David J.: *See*—
Silvestri, James T.; Podhaisky, Todd D.; Klein, Timothy E.; Baker, Mark W.; and Czarnek, David J., 5,192,152, Cl. 400-679.000.
Czerwiec, Richard M., to Alcatel Network Systems, Inc. Apparatus for line card power cross protection. 5,193,044, Cl. 361-104.000.
Dahl, Philip R.: *See*—
Gerardi, Joseph J.; Dahl, Philip R.; and Hickman, Gail A., 5,191,791, Cl. 73-178.00R.

Dahl, Roger W.; and Heil, Ronald W., Jr., to Mieczyslaw Mirowski. Controlled discharge defibrillation electrode. 5,191,901, Cl. 128-786.000.

Dahmen, Neil J.: *See*—
Turner, John; and Dahmen, Neil J., 5,192,116, Cl. 299-75.000.

Dai Nippon Insatsu Kabushiki Kaisha: *See*—
Inoue, Eiichi; Noshiro, Atsumi; and Utsumi, Minoru, 5,192,631, Cl. 430-56.000.

Dai Nippon Printing Co., Ltd.: *See*—
Ichimura, Kohji; and Utsumi, Minoru, 5,192,634, Cl. 430-85.000.

Dai Shyun Enterprise Co., Ltd.: *See*—
Hwan, Chi-Chuan, 5,192,008, Cl. 222-391.000.

Daicel Chemical Industries, Ltd.: *See*—
Shibata, Tohru; Namikoshi, Hajime; and Okamoto, Ichiro, 5,192,444, Cl. 210-635.000.

Daifuku Co., Ltd.: *See*—
Kita, Hiroaki; Murata, Koichi; and Nakano, Mamoru, 5,192,903, Cl. 318-587.000.

Daikin Industries, Ltd.: *See*—
Inukai, Hiroshi; Kitahara, Takahiro; Sugioka, Kayoko; and Mizuguchi, Morio, 5,192,635, Cl. 430-108.000.

Daimler-Benz AG: *See*—
Wirbeleit, Friedrich; and Bechtold, Martin, 5,191,862, Cl. 123-48.00B.

Dainichiseika Color & Chemicals Mfg. Co., Ltd.: *See*—
Hanada, Kazuyuki; Misaizu, Iwao; Saito, Masashi; Torii, Katsutoshi; and Kuriyama, Katsumi, 5,192,736, Cl. 503-226.000.

Dainippon Ink and Chemicals Inc.: *See*—
Anazawa, Takanori; Murata, Kazutaka; Akasu, Hiroyuki; and Mimura, Rishichi, 5,192,320, Cl. 623-12.000.

Dainippon Screen Mfg. Co., Ltd.: *See*—
Hiroe, Toshio; and Sugimoto, Kenji, 5,191,908, Cl. 134-76.000.

Dais, Brian C.: *See*—
Woods, Jamie M.; Porchia, Jose; and Dais, Brian C., 5,192,135, Cl. 383-63.000.

Dalebout, William T.; Measom, S. Ty; and Watterson, Scott R., to Weslo, Inc. Adjustable incline system for exercise equipment. 5,192,255, Cl. 482-54.000.

Dalrymple, Monte J.; Smith, Don; and Brubaker, Lois F., to Zilog, Inc. Device and method for programming critical hardware parameters. 5,193,199, Cl. 395-775.000.

Daly, Christopher N.: *See*—
Gilli, Norma L.; Holley, Lorraine; Drane, Geoffrey A.; Stephens, Anthony C.; Daly, Christopher N.; and Maas, Steven M., 5,191,884, Cl. 128-419.00D.

Dam, Chuong Q.; Hester, Virgil R.; Kelley, Kurtis C.; and Towe, Carey A., to Caterpillar Inc. Process for making piezoelectric stacks. 5,191,687, Cl. 29-25.350.

Damaskinos, Savvas: *See*—
Dixon, Arthur E.; Damaskinos, Savvas; and Bowron, John W., 5,192,980, Cl. 356-326.000.

Damborsky, Klaus, to HTM Sport- und Freizeitgeraete Gesellschaft m.b.H. Ski binding component, particularly a front jaw. 5,192,090, Cl. 280-634.000.

Damizet, Patrick, to Aldes Aeraulique; and Societe d'Etudes et de Recherche de Ventilation et d'Aeraulique S.E.R.V.A. Remote control device vacuum or ventilation system. 5,191,673, Cl. 15-314.000.

Daneshvar, Majid: *See*—
Madan, Sanjeev; Kogelnik, Hans-Joachim; and Daneshvar, Majid, 5,192,594, Cl. 427-421.000.

Danforth Biomedical, Inc.: *See*—
Danforth, John W.; Kraus, Jeff L.; Horzewski, Michael J.; and Sharkey, Hugh R., 5,192,295, Cl. 606-194.000.

Danforth, John W.; Kraus, Jeff L.; Horzewski, Michael J.; and Sharkey, Hugh R., to Danforth Biomedical, Inc. Angioplasty dilatation balloon catheter/guidewire system. 5,192,295, Cl. 606-194.000.

Danielson, Paul S., to Corning Incorporated. Lead silicate glasses. 5,192,718, Cl. 501-60.000.

Danilewicz, John C.: *See*—
Barnish, Ian T.; Danilewicz, John C.; James, Keith; Samuels, Gillian M. B.; Terrett, Nicholas K.; Williams, Michael T.; and Wythes, Martin J., 5,192,800, Cl. 514-510.000.

Dapperheld, Steffen: *See*—
vom Baur, Hans-Karl W., deceased; Dapperheld, Steffen; Kretschmann, Klaus; Lindner, Werner; Rossmeisl, Rudolf; Milluwe, Hans; and Ullmann, Gerhard, 5,192,411, Cl. 204-280.000.

Darley, Derek I., to Safe T Seal Limited. Tamperproof sealing arrangement for gas cylinders. 5,191,992, Cl. 220-214.000.

Dart Industries Inc.: *See*—
Zimmerman, Larry G., 5,192,005, Cl. 222-148.000.

da Silva, Jose E. M.; Paulo, Cezar A.; Santos Filho, Amauri G.; and Coelho, Eduardo J. J., to Petroleo Brasileiro S.A.-Petrobras. Subsea production system. 5,192,167, Cl. 405-195.100.

Daskalakis, Michael K. Synthetic intraventricular implants and method of inserting. 5,192,314, Cl. 623-3.000.

Datta, Rathin: *See*—
Jain, Mahendra K.; Beacom, Daniel; and Datta, Rathin, 5,192,673, Cl. 435-160.000.

Dauber, Neal: *See*—
Shepherd, Robert; and Dauber, Neal, 5,192,119, Cl. 303-22.800.

Daulton, Jay: *See*—
Thompson, Todd; Kloeckl, Terrance; Costa, Peter F.; Holmes, William A.; and Daulton, Jay, 5,192,288, Cl. 606-143.000.

Davidson, James A.: *See*—
Chang, Fu-Kuo; Reifsnider, Kenneth; Davidson, James A.; and Georgette, Frederick S., 5,192,330, Cl. 623-22.000.

Davis, Christopher J.: *See*—
Coates, Nigel J.; Sykes, Rachel; Davis, Christopher J.; and Curtis, Lawrence M., 5,192,742, Cl. 514-8.000.

Davis, James E.: *See*—
Zoba, Steven J.; Davis, James E.; Craig, Alan R.; and Hochberg, Alan M., 5,192,510, Cl. 422-82.050.

Davis, Jeffrey P.; Chandrasekaran, Santosh K.; Su, Yansheng; Archibald, Roy D.; and Robinson, Joseph R., to InSite Vision Incorporated. Ophthalmic suspensions. 5,192,535, Cl. 424-78.040.

Davis, Larry: *See*—
Helsley, Grover C.; Davis, Larry; and Olsen, Gordon E., 5,192,776, Cl. 514-327.000.

Davis-Reardon, Beverly J.; Gomez, Elizabeth M.; and Ryniec, Andru J., to Ambrit, Inc. Apparatus for providing a badge finding. 5,191,682, Cl. 24-13.000.

Davis, Walter L., to Motorola, Inc. Detecting out of range in response to a loss of signal and a history of approaching out of range prior to the loss of signal. 5,193,216, Cl. 455-67.700.

Davis, Warren; Wasserman, David; and Mathews, Richard R. Dental syringe tip and adaptor. 5,192,206, Cl. 433-80.000.

Dawson, Jacqueline E.; and Rikihisa, Yasuko, to United States of America, Health and Human Services. Growing Ehrlichia species in a continuous cell line. 5,192,679, Cl. 435-243.000.

Dawson, Robert E.: *See*—
Eger, Douglas R.; Smith, Douglas W.; and Dawson, Robert E., 5,192,427, Cl. 210-133.000.

Daxinger, Helmut: *See*—
Ramm, Jurgen; Daxinger, Helmut; Buhl, Rainer; and Bergmann, Erich, 5,192,578, Cl. 427-576.000.

Dayan, Richard A.: *See*—
Bealkowski, Richard; Dayan, Richard A.; Doria, David J.; Kinnear, Scott G.; Krantz, Jeffrey I.; Liverman, Robert B.; Sotomayor, Guy G.; Williams, Donald D.; and Vaiskauckas, Gary A., 5,193,161, Cl. 395-400.000.

Dayley, Kyle E.: *See*—
Hunt, Dewey R.; Hix, Veldon M.; Willard, Miles J.; and Dayley, Kyle E., 5,192,574, Cl. 426-549.000.

Dazai, Teiji, to NEC Corporation. High-speed emitter coupled logic circuit with large current driving capability. 5,192,880, Cl. 307-455.000.

de la Caffiniere, Jean-Yves, to Fixano SA. Upper locking device for centromedullary pins used for osteosynthesis of fractures of the femur, tibia, and humerus. 5,192,281, Cl. 606-59.000.

DeAngelis, Charles A.: *See*—
Kureshy, Fareed; DeAngelis, Charles A.; and MacIndoe, Robert C., Jr., 5,192,506, Cl. 422-64.000.

DeBacker, Kenneth C.: *See*—
Cutts, Richard W., Jr.; Norwood, Peter C.; DeBacker, Kenneth C.; Mehta, Nikhil A.; Jewett, Douglas E.; Allison, John D.; and Horst, Robert W., 5,193,175, Cl. 395-575.000.

Debco Pty. Ltd.: *See*—
Drysdale, Christopher J.; and Nichols, David G., 5,192,354, Cl. 71-9.000.

Debiopharm S.A.: *See*—
Orsolini, Piero; Mauvernay, Rolland-Yves; and Deghenghi, Romano, 5,192,741, Cl. 514-4.000.

DeCain, Donald M.: *See*—
Batchelder, John S.; DeCain, Donald M.; and Hobbs, Philip C. D., 5,192,870, Cl. 250-574.000.

DeCarlo, Alfred F., Jr.: *See*—
Christie, Michael J.; DeCarlo, Alfred F., Jr.; McTighe, Timothy; and Noiles, Douglas G., 5,192,329, Cl. 623-22.000.

DeCoster, Marc; and Hoffman, Jay L. Water reclamation system for landscape irrigation. 5,192,426, Cl. 210-117.000.

Dee Howard Company, The: *See*—
Fage, Etienne; and Lair, Jean-Pierre, 5,192,023, Cl. 239-11.000.

Deere & Company: *See*—
Kuhn, John B., 5,191,756, Cl. 56-17.500.

Deghenghi, Romano: *See*—
Orsolini, Piero; Mauvernay, Rolland-Yves; and Deghenghi, Romano, 5,192,741, Cl. 514-4.000.

Deilus, Robert L.: *See*—
Lisi, Dominic A.; and Deilus, Robert L., 5,192,047, Cl. 248-676.000.

Deininger, Horst: *See*—
Kleineisel, Gustav; and Deininger, Horst, 5,191,950, Cl. 180-6.300.

Delcea, Cezar C.: *See*—
Hida, George T.; Hida, Rodica S.; and Delcea, Cezar C., 5,192,720, Cl. 501-98.000.

Delloye, Thierry; and Sabot, Jean-Louis, to Rhone-Poulenc Chimie. Separation of rare earth values by liquid/liquid extraction. 5,192,443, Cl. 210-634.000.

Delmarva Sash & Door Company of Maryland, Inc.: *See*—
Cosden, Marvin P., 5,191,706, Cl. 29-787.000.

Delmer, Daniel W. C.; Delmer, Robert J.; and Delmer, William A. Drip irrigation devices and plastic films with copper powder incorporated. 5,192,027, Cl. 239-542.000.

Delmer, Robert J.: *See*—
Delmer, Daniel W. C.; Delmer, Robert J.; and Delmer, William A., 5,192,027, Cl. 239-542.000.

Delmer, William A.: *See*—
Delmer, Daniel W. C.; Delmer, Robert J.; and Delmer, William A., 5,192,027, Cl. 239-542.000.

Delprato, Francois; Guth, Jean-Louis; Hoffner, Frederique; and Zivkov, Catherine, to Societe National Elf Aquitaine. Synthesis of aluminosilicate zeolites of faujasite structure. 5,192,520, Cl. 423-702.000.

Delsanto, Mario, to Meca-Tronic S.n.c. di Rusina'V., Spatolisano F., & C. Machine for grouping in parallel rows products arriving in a single line, particularly for feeding cartoning machines and the like. 5,191,963, Cl. 198-429.000.

Delucia, Mary L.: *See—*
Weber, Robert E.; and Delucia, Mary L., 5,191,734, Cl. 47-9.000.

DeMaio, James B.: *See—*
Stout, James T.; and DeMaio, James B., 5,191,976, Cl. 206-198.000.

DeMond, Thomas W.: *See—*
Thompson, E. Earle; and DeMond, Thomas W., 5,192,946, Cl. 340-794.000.

Demoute, Jean-Pierre: *See—*
Babin, Didier; Benoit, Marc; Demoute, Jean-Pierre; and Tessier, Jean, 5,192,801, Cl. 514-521.000.

Dempster, Robert P.: *See—*
Harrison, Gavin B. L.; Dempster, Robert P.; Rickard, Michael D.; Lightowlers, Marshall W.; Heath, David D.; Lawrence, Stephen B.; and O'Hoy, Kim L., 5,192,538, Cl. 424-88.000.

de Nanteuil, Guillaume: *See—*
Malen, Charles; de Nanteuil, Guillaume; and Colpaert, Francis, 5,192,775, Cl. 514-321.000.

Dendor, Paul F.: *See—*
Johnson, Craig E.; and Dendor, Paul F., 5,192,379, Cl. 149-19.400.

Denki Kagaku Koygo Kabushiki Kaisha: *See—*
Nishioka, Asaaki; Sakai, Etsuo; Kaneko, Tomohiro; and Ogasawara, Masaki, 5,192,366, Cl. 106-724.000.

Denz, Helmut, to Robert Bosch GmbH. Ratiometric signal correction system for a vehicle electronic control system. 5,191,781, Cl. 73-1.00E.

Deprenyl Animal Health, Inc.: *See—*
Ruehl, William W.; Bruyette, David S.; and Stevens, David, 5,192,808, Cl. 514-654.000.

Desbos, Gilbert: *See—*
Sibony, Jacques; and Desbos, Gilbert, 5,192,441, Cl. 210-603.000.

DeSena, Danforth. X-ray identification marker. 5,193,106, Cl. 378-163.000.

De Silvestri, Fosco, to Ferrari SpA. Safety interlock device for a motor vehicle gearbox control. 5,191,806, Cl. 74-477.000.

Desobry, Vincent: *See—*
Steiner, Eginhard; Beyeler, Harry; Riediker, Martin; Desobry, Vincent; Dietliker, Kurt; and Husler, Rinaldo, 5,192,642, Cl. 430-281.000.

Dessau, Ralph M.; Valyocsik, Ernest W.; and Vartuli, James C., to Mobil Oil Corporation. Tin-colating microporous crystalline materials and their use as dehydrogenation, dehydrocyclization reforming catalysts. 5,192,728, Cl. 502-66.000.

Detwiler, Paul O., to NCR Corporation. Compact optical scanner rotatable between horizontal and vertical positions. 5,192,857, Cl. 235-467.000.

Deutschbein, Ulrich: *See—*
Reil, Wilhelm; Deutschbein, Ulrich; Knobloch, Gerd; and Liebram, Udo, 5,191,988, Cl. 220-4.240.

Dezeny, Georgette: *See—*
Treiber, Laszlo R.; Colwell, Lawrence F., Jr.; Arison, Byron H.; Dezeny, Georgette; Lingham, Russell B.; Thompson, Wayne J.; and Balani, Suresh K., 5,192,668, Cl. 435-41.000.

DiBenedetto, Richard. Recycling bin cart. 5,192,092, Cl. 280-654.000.

Dicey Fabrics, Incorporated: *See—*
Neisler, Henry P., 5,192,601, Cl. 428-120.000.

Dielpromex S.A. de C.V.: *See—*
Espinoza, Carlos A.; and Velazquez, Jose, 5,193,042, Cl. 361-79.000.

Dietliker, Kurt: *See—*
Steiner, Eginhard; Beyeler, Harry; Riediker, Martin; Desobry, Vincent; Dietliker, Kurt; and Husler, Rinaldo, 5,192,642, Cl. 430-281.000.

Dietz, Philip S.: *See—*
Brockway, Robert C.; Dietz, Philip S.; and Nguyen, Lo C., 5,191,970, Cl. 200-335.000.

DiGiacomo, Giulio: *See—*
Cammarano, Armando S.; DiGiacomo, Giulio; and DiPaolo, Nunzio, 5,192,622, Cl. 428-551.000.

Digital Equipment Corporation: *See—*
Awiszio, Desiree A.; Soman, Satish; and Clark, Paul H., 5,193,149, Cl. 395-200.000.
Jain, Rajendra K., 5,193,151, Cl. 395-200.000.
McKeeman, William M.; and Aki, Shota, 5,193,191, Cl. 395-700.000.
Samarov, Victor M.; and Doumani, George A., 5,192,214, Cl. 439-67.000.
Sanders, Douglas E.; and Callander, Michael A., 5,193,163, Cl. 395-425.000.
Sites, Richard L.; and Witek, Richard T., 5,193,167, Cl. 395-425.000.
Smith, Alan B.; and Mallary, Michael, 5,193,039, Cl. 360-113.000.
Thacker, Charles P., 5,193,197, Cl. 395-725.000.
Umina, Leonard J.; and Anselmo, Robert A., 5,193,071, Cl. 365-189.010.
Velasco, Daniel J. J.; Robinson, Dennis C.; Copeland, Jeffrey P.; and Fernandez, Ricardo L., 5,192,893, Cl. 315-85.000.

Dill, Walter R.: *See—*
Himes, Ronald E.; and Dill, Walter R., 5,191,931, Cl. 166-282.000.

Dilmore, Colonel R.: *See—*
DuBois, Donald W.; and Dilmore, Colonel R., 5,192,401, Cl. 204-98.000.

Dimmick, Roger F.; Kleve, Vernon J.; Meyer, Timothy L.; Thompson, Gary A.; and Westphal, Gordon W., to International Business Machines Corporation. Enclosure for electronic subsystems in a data processing system. 5,193,050, Cl. 361-384.000.

DiNinno, Frank; Dykstra, Kevin D.; and Heck, James V., to Merck & Co., Inc. 2-biphenyl-carbapenem antibacterial agents. 5,192,758, Cl. 514-210.000.

DiPaolo, Nunzio: *See—*
Cammarano, Armando S.; DiGiacomo, Giulio; and DiPaolo, Nunzio, 5,192,622, Cl. 428-551.000.

Dir, Gary A.; Schmidlin, Fred W.; Sotack, John D.; and Stephany, Joseph F., to Xerox Corporation. Method and apparatus for producing variable width pulses to produce an image having gray levels. 5,193,011, Cl. 358-455.000.

Dismukes, Edward B., to Electric Power Research Institute, Inc. Method of removing selenium from flue gases. 5,192,514, Cl. 423-210.000.

DiStefano, Ralph D., to Harris Corporation. Electroformed method for fabricating round mesa millimeter wave waffleline structure. 5,192,588, Cl. 427-247.000.

Dittmar, Norman R.: *See—*
Brueggemann, Douglas C.; and Dittmar, Norman R., 5,192,930, Cl. 340-477.000.

Dive N'Surf, Inc.: *See—*
Meistrell, William R., 5,191,658, Cl. 2-2.10R.

Dixit, Pankaj: *See—*
Sliwa, John W., Jr.; and Dixit, Pankaj, 5,192,715, Cl. 437-195.000.

Dixon, A. E.: *See—*
Dixon, Arthur E.; Damaskinos, Savvas; and Bowron, John W., 5,192,980, Cl. 356-326.000.

Dixon, Arthur E.; Damaskinos, Savvas; and Bowron, John W., to Dixon, A. E. Apparatus and method for method for spatially- and spectrally-resolved measurements. 5,192,980, Cl. 356-326.000.

Dixon, Dabney W.; Schinazi, Raymond F.; and Marzilli, Luigi G., to Georgia State University Foundation, Inc.; and Emory University. Porphyrin antiviral compositions. 5,192,788, Cl. 514-410.000.

Djuric, Stevan W.; Penning, Thomas D.; and Snyder, James P., to G. D. Searle & Co. Alkoxy-substituted dihydrobenzopyran-2-carboxylic acids and derivatives thereof. 5,192,782, Cl. 514-376.000.

Doben Limited: *See—*
Beneteau, David M.; and Dolata, Mark J., 5,191,825, Cl. 91-173.000.

Dr.-Ing. Ludwig Muller & Sohne Gesellschaft fur Bautechnik mbH & Co. KG: *See—*
Massarsch, Karl R.; and Heppel, Gunter, 5,192,168, Cl. 405-258.000.

Doherty, Patrick J.: *See—*
Arison, Byron H.; Schulman, Marvin D.; and Doherty, Patrick J., 5,192,671, Cl. 435-101.000.

Doherty, Roger D.; Liu, John; and Sanders, Robert E., Jr., to Aluminum Company of America. Aluminum alloy sheet for food and beverage containers. 5,192,378, Cl. 148-691.000.

Doi, Takashi: *See—*
Kitajima, Hiroyuki; Yamamoto, Akira; Doi, Takashi; and Nozawa, Masafumi, 5,193,154, Cl. 395-250.000.

Dolata, Mark J.: *See—*
Beneteau, David M.; and Dolata, Mark J., 5,191,825, Cl. 91-173.000.

Dolin, Robert A., Jr., to Echelon Corporation. Power line communications coupler. 5,192,231, Cl. 439-620.000.

Doll, Peter: *See—*
Craft, Barrie G.; Doll, Peter; and Martin, Frank, 5,191,810, Cl. 74-572.000.

Dominion Plastics Inc.: *See—*
Ross, Alan, 5,191,735, Cl. 49-74.00L.

Donat, Albrecht: *See—*
Schweigert, Ralf; and Donat, Albrecht, 5,192,917, Cl. 328-162.000.

Dong A Electric Parts Co., Ltd.: *See—*
Lee, Woo Y., 5,192,937, Cl. 337-104.000.

Doninger, Michael B. End finishing device for rope, wire, cable, and the like. 5,192,144, Cl. 403-209.000.

Donnelly Corporation: *See—*
Schofield, Kenneth; Gahan, Richard J.; Schierbeek, Kenneth L.; and Larson, Mark L., 5,193,029, Cl. 359-604.000.

Donohue, Patrick T. Digital traction system. 5,191,903, Cl. 128-879.000.

Donovan, Kenneth B.: *See—*
Ferguson, Robert L.; Ellis, John R.; and Donovan, Kenneth B., 5,192,208, Cl. 434-2.000.

Doria, David J.: *See—*
Bealkowski, Richard; Dayan, Richard A.; Doria, David J.; Kinnear, Scott G.; Krantz, Jeffrey I.; Liverman, Robert B.; Sotomayor, Guy G.; Williams, Donald D.; and Vaiskauckas, Gary A., 5,193,161, Cl. 395-400.000.

Doryokuro Kakunenryo Kaihatsu Jigyodan: *See—*
Tashiro, Hideo; Midorikawa, Katsumi; and Suzuki, Mitsutoshi, 5,193,095, Cl. 372-3.000.

Dossot, Alain; and Fourche, Jean-Pierre, to Videocolor. Deflection yoke with ringing suppression means. 5,192,898, Cl. 315-370.000.

Douglas, Gordon W.: *See—*
Boyse, Edward A.; Broxmeyer, Hal E.; and Douglas, Gordon W., 5,192,553, Cl. 424-529.000.

Doumani, George A.: *See—*
Samarov, Victor M.; and Doumani, George A., 5,192,214, Cl. 439-67.000.

Dow Chemical Company, The: *See—*
Caskey, Terrence L., 5,192,478, Cl. 264-139.000.
Quinn, Karen D.; and Miller, Theodore E., Jr., 5,192,691, Cl. 436-161.000.

Dow Danmark A/S: *See—*
Moller, Jens K., 5,192,434, Cl. 210-227.000.

Dowbrands L.P.: *See—*
Woods, Jamie M.; Porchia, Jose; and Dais, Brian C., 5,192,135, Cl. 383-63.000.

DP-Tek, Inc.: *See—*
Frazier, Allen L.; and Pierson, James S., 5,193,008, Cl. 358-298.000.

Draenert, Klaus. Suction drainage-bone screw. 5,192,282, Cl. 606-65.000.

Drake, Donald J.; Rezanka, Ivan; and Warner, Fredrick A., to Xerox Corporation. Alignment of pagewidth bars. 5,192,959, Cl. 346-140.00R.

Drake, Evelyn N.: *See—*
McDougall, Lee A.; Newlove, John C.; Manalastas, Pacifico V.; and Drake, Evelyn N., 5,192,615, Cl. 428-402.240.

Drake, James M.; Fox, Richard; and Bahoric, Andre, to HSC Research & Development Limited Partnership; and Drake, James M. Adjustable-resistance anti-siphon device. 5,192,265, Cl. 604-10.000.

Drane, Geoffrey A.: *See—*
Gilli, Norma L.; Holley, Lorraine; Drane, Geoffrey A.; Stephens, Anthony C.; Daly, Christopher N.; and Maas, Steven M., 5,191,884, Cl. 128-419.00D.

Dresser-Rand Company: *See—*
Jones, Henry F., Jr.; and Shapiro, Wilbur, 5,192,083, Cl. 277-29.000.

Drexel, Charles F.; and Blair, Richard F., to Tylan Corporation. Fluid mass flow meter device with reduced attitude sensitivity. 5,191,793, Cl. 73-204.220.

Drey, Mark D.: *See—*
Barrier, James M.; Drey, Mark D.; Montford, Leslie V.; and Tan, Stephen S., 5,192,384, Cl. 156-189.000.

Driessen, Jose L.: *See—*
Lilie, Dietmar E. B.; Driessen, Jose L.; Todescat, Marcio L.; and Krueger, Manfred, 5,192,200, Cl. 417-566.000.

Drogaris, Anthony N.: *See—*
Kinney, Daryl F.; Drogaris, Anthony N.; Mills, Christopher H.; Kahaiyan, Michael; and Manton, John, 5,193,158, Cl. 395-375.000.

Drysdale, Christopher J.; and Nichols, David G., to Debco Pty. Ltd. Soil substitute. 5,192,354, Cl. 71-9.000.

Du Pont Merck Pharmaceutical Company: *See—*
Bahal, Surendra M.; Field, Kenneth S.; and Maurin, Michael B., 5,192,784, Cl. 514-398.000.

DuBois, Donald W.; and Dilmore, Colonel R., to PPG Industries, Inc. Diaphragm for use in chlor-alkali cells. 5,192,401, Cl. 204-98.000.

Dubois, Jon D., to Quality Tubing, Inc. Continuous length of coilable tubing. 5,191,911, Cl. 138-100.000.

Duckeck, Ralf: *See—*
Mardus, Claus; Duckeck, Ralf; and Bragas, Peter, 5,193,214, Cl. 455-54.200.

Duczmal, Tomasz; and Schneider, Jakob H., to Hydro Processing & Mining Ltd. Apparatus and method for separation of wet particles. 5,192,423, Cl. 209-164.000.

Dudley, John M., to Tennelic/Nucleus Inc. Improved proportional counter detector. 5,192,868, Cl. 250-374.000.

Dufour, William T., to TRW Vehicle Safety Systems Inc. Retractor with manual cinch. 5,192,035, Cl. 242-107.40R.

Dunbar, James G.: *See—*
Gabany, Andrew J.; and Dunbar, James G., 5,192,230, Cl. 439-620.000.

Duncan, Don. Basketball type game. 5,192,080, Cl. 273-412.000.

Duncan, L. Scot: *See—*
Stumphauzer, William C.; Groth, Hugh F.; and Duncan, L. Scot, 5,192,513, Cl. 422-305.000.

Dunham, William D.; and Heiti, John C., to Outboard Marine Corporation. Outboard motor vibration isolation system including improved rubber mount. 5,192,235, Cl. 440-52.000.

Dunn, Yvonne O.: *See—*
Huang, Shu-Jen W.; Shetty, Chandrashekar S.; Bui, Nang T.; Dunn, Yvonne O.; Bhattacharyya, Uma; and Bhattacharyya, Bhupati R., 5,192,449, Cl. 210-712.000.

Du Pont de Nemours, E. I., and Company: *See—*
Blanchet-Fincher, Graciela B., 5,192,580, Cl. 427-596.000.
Chan, Dominic M.; and LeStrange, Raymond J., 5,192,655, Cl. 430-600.000.
Coates, Don M.; McMillin, Carl K.; and Chen, John C., 5,192,468, Cl. 264-13.000.
Forsythe, George D., 5,192,597, Cl. 428-34.500.
Ittel, Steven D.; and Tebbe, Frederick N., 5,192,730, Cl. 502-108.000.
Lawton, John A.; Laganis, Evan D.; and Hohman, James L., Jr., 5,193,024, Cl. 359-253.000.
Ostapchenko, George J., 5,192,308, Cl. 623-1.000.
Pontrelli, Gene J.; and Zafiroglu, Dimitri P., 5,192,600, Cl. 428-102.000.
Sieja, James B., 5,192,399, Cl. 203-36.000.
Work, Ray A., III; Milner, Clifford E.; Kintner, Sarah J.; Genthe, James E.; Strella, Stephen; and Iacovella, Charles R., 5,192,613, Cl. 428-363.000.
Zoha, Steven J.; Davis, James E.; Craig, Alan R.; and Hochberg, Alan M., 5,192,510, Cl. 422-82.050.

Duranel, Laurent; Spitz, Roger; and Soto, Thierry, to Atochem. Propylene polymerization cocatalyst containing silane and resultant catalysts. 5,192,732, Cl. 502-126.000.

Duthoo, Dominique, to Societe Franco-Belge de Fabrication de Combustibles-FBFC. Equipment for drilling and/or closing off by laser the seal weld hole of a fuel rod. 5,192,846, Cl. 219-121.630.

Dwyer, Duane D.: *See—*
Peterson, Jeffrey M.; Evers, Ronald P.; Rusch, Peter G.; Dwyer, Duane D.; Macky, Barry L.; and Boldt, James D., 5,192,063, Cl. 269-257.000.

Dykstra, Kevin D.: *See—*
DiNinno, Frank; Dykstra, Kevin D.; and Heck, James V., 5,192,758, Cl. 514-210.000.

E-Z Sales and Manufacturing, Inc.: *See—*
Remeyer, Steven C.; and Meoli, Rudy B., Jr., 5,192,126, Cl. 362-184.000.

Eastern Company, The: *See—*
Weinerman, Lee S.; Pastva, John V., Jr.; and Mayo, Steven A., 5,192,096, Cl. 292-45.000.

Eastin, John A., to Kamterter Products, Inc. Manufacturing and using nitrogen fertilizer solutions on a farm. 5,192,355, Cl. 71-54.000.

Eastman Kodak Company: *See—*
Bull, David N.; Ozimek, Edward J.; and Tarn, Terry, 5,192,835, Cl. 174-260.000.
Burnham, William L., 5,192,648, Cl. 430-496.000.
Carroll, John F., Jr., 5,192,609, Cl. 428-328.000.
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Shon, Russell D., 5,193,164, Cl. 395-425.000.
Smith, Neil, 5,193,038, Cl. 360-113.000.
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Burrows, Bruce D., 5,192,004, Cl. 222-146.100.

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Dolin, Robert A., Jr., 5,192,231, Cl. 439-620.000.

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Bussell, William R.; and Morgan, Nicholas S., 5,192,363, Cl. 106-218.000.
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Dismukes, Edward B., 5,192,514, Cl. 423-210.000.
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Roth, Gary L.; and Zillmann, William D., 5,192,439, Cl. 210-485.000.
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Choi, Jun K.; Choi, Mun K.; Kim, Kyung S.; Jeong, Tae S.; and Shin, Young S., 5,193,088, Cl. 370-60.000.
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Schoner, Brigitte E.; and Schoner, Ronald G., 5,192,669, Cl. 435-69.400.
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Theis, Kenneth R., 5,192,887, Cl. 310-68.00C.
Zink, David E.; and Amonett, Daniel K., 5,193,078, Cl. 368-107.000.
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Stupka, Jonathan C.; Bokros, Jack C.; Emken, Michael R.; Haubold, Axel D.; and Peters, T. Scott, 5,192,309, Cl. 623-2.000.
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Endo, Junji: *See*—
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Laturner, John F., 5,192,157, Cl. 404-6.000.
Energy Partners, Inc.: *See*—
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Engel, Franklin D., to Pacific Rockies, Inc. Auger-type ice-making apparatus. 5,191,772, Cl. 62-320.000.
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Engstrom, Johan: *See*—
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Entrelec S.A.: *See*—
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Uhr, Hermann; Marhold, Albrecht; Andres, Peter; Erdelen, Christoph; Wachendorff-Neumann, Ulrike; and Stendel, Wilhelm, 5,192,794, Cl. 514-422.000.
Erika, Inc.: *See*—
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Espinueva, Belarmino G. Fence construction system. 5,192,056, Cl. 256-65.000.
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Euler, John W.; Kovich, Mark B.; Farrington, Sheryl L.; Pastryk, Jim J.; Van Newenhizen, Jeanne C.; and Hardaway, Anthony H., to Whirlpool Corporation. Spin method of rinsing fabric in a horizontal axis washer. 5,191,668, Cl. 8-158.000.
Euler, John W.; Kovich, Mark B.; Pastryk, Jim J.; Farrington, Sheryl L.; and Hardaway, Anthony H., to Whirlpool Corporation. Spin method of washing fabric in a horizontal axis washer. 5,191,669, Cl. 8-158.000.
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Fa, Yen C. Magnetic rubber suction disc. 5,192,043, Cl. 248-206.200.
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Fachini, Robert L.; Walser, Kenneth D.; Chance, John H.; and Miller, Daniel A., to Case Corporation. Discharge conveying system for a cotton harvester. 5,191,757, Cl. 56-30.000.
Fachini, Robert M.; Chance, John H.; Miller, Daniel A.; and Brandt, David, to Case Corporation. Hydraulic drive system for a cotton harvester. 5,191,753, Cl. 56-10.900.
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Farina, Vittorio: *See*—
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Farrington, Sheryl L.: *See*—
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Faure, Jean-Marie. Pack for administration of sterile liquids including pharmaceutical, nutrient and energy-source liquids. 5,192,272, Cl. 604-141.000.
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Fowler, Clifford C.; and Goett, Edward P., to Engineered Transitions Co., Inc. Vibration resistant locking coupling. 5,192,219, Cl. 439-321.000.
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Franaszek, Peter A.; Robinson, John T.; and Thomasian, Alexander, to International Business Machines Corporation. Centralized and distributed wait depth limited concurrency control methods and apparatus. 5,193,188, Cl. 395-650.000.
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Francis, Robert L.; and Minnihan, James W., to Case Corporation. Rotor assembly for a combine. 5,192,246, Cl. 460-72.000.
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Francke, Kurt, to Rfsu Rehab AB. Device for attaching a toilet elevator to the bowl of a toilet. 5,191,660, Cl. 4-239.000.
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Nakashima, Yoshito, 5,192,545, Cl. 424-405.000.

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Yamaguchi, Mikimasa; Nakagawa, Michio; Ohanamori, Hideyuki; Yoshida, Masayuki; Arai, Toshitaka; and Matsushita, Hiroshi, 5,192,413, Cl. 204-300.00R.

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Sogo, Hiroyuki; Kondo, Yasuyuki; and Yamazaki, Kazuhisa, 5,192,926, Cl. 333-204.000.

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Hioki, Takanori; and Takei, Haruo, 5,192,654, Cl. 430-576.000.
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Kojima, Tetsuro; Ishiguro, Shoji; Okada, Hisashi; and Yagihara, Morio, 5,192,647, Cl. 430-448.000.
Kubodera, Seiiti; and Sato, Kozo, 5,192,737, Cl. 503-227.000.
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Morita, Kiyoo, 5,192,481, Cl. 264-246.000.
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Seto, Nobuo; and Morigaki, Masakazu, 5,192,650, Cl. 430-546.000.
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Yazawa, Kenichiro; Kitajima, Masao; and Kondo, Asaji, 5,192,693, Cl. 436-169.000.

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Saito, Susumu; Imai, Takashi; Inoue, Satoshi; and Sugizaki, Yutaka, 5,192,637, Cl. 430-109.000.

Fujii, Atsushi: *See*—
Matuzawa, Kouzaburo; and Fujii, Atsushi, 5,192,484, Cl. 264-555.000.

Fujii, Kazuo, to Zexel Corporation. Automobile air conditioner compressor discharge capacity controller. 5,191,768, Cl. 62-209.000.

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Iwami, Morita; Aramori, Ichiro; Fukagawa, Masao; Isogai, Takao; and Kojo, Hitoshi, 5,192,678, Cl. 435-228.000.
Shiokawa, Youichi; Okumura, Kazuo; Take, Kazuhiko; and Tsubaki, Kazunori, 5,192,779, Cl. 514-346.000.

Fujita, Kazuo: *See*—
Inagaki, Akira; Kurokawa, Masao; Hasegawa, Hiroyuki; Ishibashi, Toshihiro; Hadano, Hiroaki; Hioki, Takeshi; Toriyama, Yoshimi; Fujita, Kazuo; Takeshima, Yasushi; Wakatsuki, Teruyuki; and Horiuchi, Yasushi, 5,191,778, Cl. 72-13.000.

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Hirano, Katsumi; Fujita, Munehisa; and Ohzeki, Katsuhisa, 5,192,649, Cl. 430-497.000.

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Kohno, Keiichi, 5,193,146, Cl. 388-811.000.
Kotachi, Akiko; and Takechi, Satoshi, 5,192,643, Cl. 430-296.000.
Okazaki, Katsuyoshi, 5,193,093, Cl. 371-34.000.
Sasaki, Susumu, 5,193,222, Cl. 455-102.000.
Sogo, Hiroyuki; Kondo, Yasuyuki; and Yamazaki, Kazuhisa, 5,192,926, Cl. 333-204.000.
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Soneda, Hideo; Yamashita, Junichi; Fukasawa, Yukihisa; Ueki, Taro; and Izutsu, Sadayuki, 5,192,496, Cl. 376-428.000.

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Shuto, Mitsutoshi; Fukazawa, Yasushi; and Ohsaki, Minoru, 5,192,371, Cl. 118-728.000.

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Araki, Nobuo; Kagami, Takeji; Chatani, Yoji; Kikuta, Shunichi; Yamada, Iwao; Kamada, Masao; Hashimoto, Seiji; Ueno, Shuichi; Fukui, Takeshi; Nakamura, Takumi; Mizuhashi, Nobuo; and Ishikawa, Yasushi, 5,192,016, Cl. 228-147.000.

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Hatano, Susumu; Oishi, Kanji; Kikuchi, Takashi; Saigou, Yasuhiko; Fukuta, Hiroshi; Uchiyama, Kunio; Aoki, Hirokazu; and Nishii, Osamu, 5,193,075, Cl. 365-233.000.

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McDonald, James A.; Comroe, Richard A.; Sobti, Arun; Bocci, Paul M.; Furtaw, Robert W.; and Hiben, Bradley M., 5,193,101, Cl. 375-1.000.

Furuhashi, Ryoichi: *See*—
Kojima, Hiroshi; Sakata, Keikichi; Watanabe, Seigo; Mitsukuchi, Yukio; Hashimoto, Shuichi; Kato, Choji; Teshigawara, Mikiro; Furuhashi, Ryoichi; Momoi, Shoji; Inoue, Toshihiko; Uemura, Kazuki; and Oshima, Katsushi, 5,191,817, Cl. 82-1.110.

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Kuramoto, Koshi; Nakagawa, Tsuguhiko; Shibuya, Satoshi; Ogawa, Takao; Kaihara, Toshikazu; and Furukawa, Kusuo, 5,192,485, Cl. 266-80.000.

Furumoto, Hideaki: *See*—
Kishi, Osamu; Hayashi, Kanji; Furumoto, Hideaki; Miyamoto, Osamu; Morimoto, Kazuo; Akita, Hideki; Yoshida, Yasuyuki; and Wakamoto, Ikuo, 5,191,696, Cl. 29-521.000.

Furuta, Steven J.: *See*—
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G. D. Searle & Co.: *See*—
Djuric, Stevan W.; Penning, Thomas D.; and Snyder, James P., 5,192,782, Cl. 514-376.000.

Gabany, Andrew J.; and Dunbar, James G., to AMP Incorporated. Vertical mount connector. 5,192,230, Cl. 439-620.000.

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Strout, Robert E., II; Spix, George A.; Miller, Edward C.; Schooler, Anthony R.; Silbey, Alexander A.; Phelps, Andrew E.; Vanderwarn, Brian D.; and Gaertner, Gregory G., 5,193,187, Cl. 395-650.000.

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Jones, C. Andrew; Gaffney, Anne M.; Leyshon, David W.; Cozzone, Glenn E.; and Sofranko, John A., 5,192,809, Cl. 521-40.000.

Gafni, Ehud; and Yarnitsky, David, to Medoc Ltd. Apparatus for measuring threshold sensitivity to a stimulus. 5,191,896, Cl. 128-742.000.

Gahan, Richard J.: *See*—
Schofield, Kenneth; Gahan, Richard J.; Schierbeek, Kenneth L.; and Larson, Mark L., 5,193,029, Cl. 359-604.000.

Gailey, J. Lynn, to Alcan Aluminum Corporation. Concealing trim cap assembly for a wall or ceiling panel system. 5,191,743, Cl. 52-718.050.

Gaines, Ronald J.: *See*—
Mills, Nigel G.; and Gaines, Ronald J., 5,191,949, Cl. 177-229.000.

Gallagher, John M.: *See*—
Erin, Lawrence E.; Catullo, William J., Jr.; Paris, Richard E.; and Gallagher, John M., 5,192,493, Cl. 376-211.000.

Gallagher, Kevin F.: *See*—
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Galloway, Gary L.; Latos, Thomas S.; and Roe, Derrick, to Sundstrand Corporation. DC content control in a dual VSCF converter system. 5,193,054, Cl. 363-72.000.

Gamache, Roger A., to Mag Chem Inc. Detection of an anticorrosion oil applied into a ship's ballast. 5,191,803, Cl. 73-865.800.

Gamache, Ronald W.; and Tourtellott, John A., to Mechanical Technology Incorporated. Machine vision three dimensional profiling system. 5,193,120, Cl. 382-1.000.

Gane, Christopher P.: *See*—
Bachman, Charles W.; Gane, Christopher P.; Krieger, David A.; Micco, John T.; and Abramovich, Igor, 5,193,182, Cl. 395-600.000.

Ganslmeier, Michael; and Wunschmann, Horst, to GW-Elektronik GmbH. Methods of producing a chip-type HF magnetic coil arrangement. 5,191,699, Cl. 29-602.100.

Gardner-Chavis, Ralph A.; and May, Michael P., to Molecular Technology Corporation. Reduction of nitrogen oxide and carbon monoxide in effluent gases. 5,192,515, Cl. 423-213.200.

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Gasbarro, Geno: *See*—
Saita, Tateji, 5,192,241, Cl. 452-135.000.

Gately, Daniel M.; Zezza, Louis J.; and Masetti, William R., to Consolidation Edison Company of New York, Inc. Method and apparatus for fluid sealing of steam generator. 5,192,492, Cl. 376-203.000.

Gatti, John E. Smoke aspirating device. 5,192,276, Cl. 604-313.000.

Gatturna, Roland F.; Nicholson, James E.; and O'Leary, James, to Mitek Surgical Products, Inc. Suture anchor. 5,192,303, Cl. 606-232.000.

Gawronski, Brian J.: *See*—
Latham-Brown, Ernest; Gawronski, Brian J.; and Hubbe, Peter W., 5,193,118, Cl. 381-86.000.

Gay, Michael J., to Motorola, Inc. Clamp circuit. 5,192,885, Cl. 307-555.000.

Gebauer, Gerhard; Goes, Wilfried; and Rosenauer, Otto, to J. Wagner GmbH. Diaphragm pump construction. 5,192,198, Cl. 417-383.000.

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McEwen, Robert K.; and MacLeod, Alan D., 5,192,864, Cl. 250-234.000.
Singh, Bhajan; and Considine, Vincent, 5,193,103, Cl. 375-120.000.

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Geick, David W.: *See*—
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Gelas, Daniel: *See*—
Quang, Dang V.; Ham, Pierre; Gelas, Daniel; and Legrand, Christian, 5,192,512, Cl. 422-190.000.

Genentech, Inc.: *See*—
Hsu, Chung C.; Nguyen, Hoc M.; and Wu, Sylvia S., 5,192,743, Cl. 514-8.000.

General Dynamics Corporation, Space Systems Division: *See*—
Maki, Stanley C., 5,193,064, Cl. 364-454.000.

General Electric Company: *See*—
Correa, Sanjay M., 5,192,516, Cl. 423-235.000.
Ferguson, Robert L.; Ellis, John R.; and Donovan, Kenneth B., 5,192,208, Cl. 434-2.000.
Fishman, Marvin, 5,192,625, Cl. 428-668.000.
Fleer, Mark F., 5,192,888, Cl. 310-71.000.
Hardy, Christopher J.; Bottomley, Paul A.; and Cline, Harvey E., 5,192,909, Cl. 324-309.000.
Indig, Maurice E.; and Hanlon, Jerry F., 5,192,414, Cl. 204-400.000.
Klappert, Willi; and Freeman, David R., 5,191,700, Cl. 29-609.000.
Lay, Kenneth W., 5,192,739, Cl. 505-1.000.
Severance, Martin C.; and Searl, Stephen, 5,191,776, Cl. 62-513.000.

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Beck, Blaine E., 5,191,881, Cl. 128-205.240.

GeneType AG: *See*—
Simons, Malcolm J., 5,192,659, Cl. 435-6.000.

Genise, Thomas A., to Eaton Corporation. Dual force fluid actuated shift device. 5,191,804, Cl. 74-335.000.

Genthe, James E.: *See*—
Work, Ray A., III; Milner, Clifford E.; Kintner, Sarah J.; Genthe, James E.; Strella, Stephen; and Iacovella, Charles R., 5,192,613, Cl. 428-363.000.

Geo Search Co., Ltd.: *See*—
Tomita, Hiroshi, 5,192,953, Cl. 342-22.000.

George, Pascal; Menin, Jacques; Merly, Jean-Pierre; Bigg, Dennis; Obitz, Daniel; Peynot, Michel; and Veronique, Corinne, to Synthelabo. [(1-arylpyrrolidin-2-yl)methyl]piperazine derivatives, their preparation and their application in therapeutics. 5,192,763, Cl. 514-252.000.

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Dixon, Dabney W.; Schinazi, Raymond F.; and Marzilli, Luigi G., 5,192,788, Cl. 514-410.000.

Gerald, Howard: *See*—
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Gerner, James L., to Fixtures Manufacturing Corporation. Split hemisphere foot with cooperating snap-over retaining lips. 5,191,676, Cl. 16-42.00T.

Gettel, Roger W., to Ford Motor Company. Flow control orifice for parallel flow fluid supply to power steering gear. 5,192,196, Cl. 417-300.000.

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Ghirardi, Orlando: *See*—
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Giannessi, Fabio; Ghirardi, Orlando; Misiti, Domenico; Tinti, Maria O.; and Cozzolino, Roberto, to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A. Derivatives of 1,2,3,4-tetrahydronaphtylamine endowed with nootropic activity and pharmaceutical compositions containing same. 5,192,759, Cl. 514-212.000.

Giat Industries: *See*—
Suire, Christian G., 5,192,829, Cl. 102-434.000.

Gibson, George A.: *See*—
Landa, Benzion; Ben-Auraham, Peretz; Hall, Joseph; and Gibson, George A., 5,192,638, Cl. 430-137.000.

Gibson, Rowland W., to W. L. Gore & Associates, Inc. Assembly for terminating a cable and processes for manufacture and termination thereof. 5,192,833, Cl. 174-74.00R.

Giddings & Lewis, Inc.: *See*—
Tolocko, Gary, 5,191,958, Cl. 198-346.200.

Gie, Graham A.: *See*—
Ling, Robin S. M.; Gie, Graham A.; Mikhail, W. E. Michael; Elting, James J.; and Slooff, Tom J. J. H., 5,192,283, Cl. 606-93.000.

Giglia, Robert D., to American Cyanamid Company. Fibrillated fibers and articles made therefrom. 5,192,604, Cl. 428-224.000.

Gilbert, Herve . Combined trash compactor/conveyor for garbage truck. 5,192,031, Cl. 241-101.700.

Gilbert, Michael B., to Harsco Corporation. Railroad bogie and rail grinder using the bogie. 5,191,841, Cl. 105-167.000.

Gill, Patrick H., to Calgon Corporation. Method for controlling zebra mussels in ship ballast tanks. 5,192,451, Cl. 210-755.000.

Gillberg-Laforce, Gunilla E.; and Pruksamukul, Josefina L., to Hoechst Celanese Corp. Articles containing side chain polymeric ultraviolet protecting agents. 5,192,621, Cl. 428-480.000.

Gillette Company, The: *See*—
Crook, Alan; Oglesby, Oliver D.; and Oldroyd, Brian, 5,191,712, Cl. 30-34.200.

Gilli, Norma L.; Holley, Lorraine; Drane, Geoffrey A.; Stephens, Anthony C.; Daly, Christopher N.; and Maas, Steven M., to Telectronics N.V. Reconfirmation prior to shock for implantable defibrillation. 5,191,884, Cl. 128-419.00D.

Gillio, Claudio, to Ing. C. Olivetti & C., S.p.A. Cassette for typing ribbon for typewriters. 5,192,149, Cl. 400-208.000.

Gillis, Donald P.: *See*—
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Ginocchio, Alessandro: *See—*
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Gislason, Stephen: *See—*
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GKI: *See—*
Schaef, Irving W., 5,192,127, Cl. 362-226.000.

Glass, Kevin W., to MOS Electronics Corporation. Charge-pump phase locked loop circuit. 5,192,916, Cl. 328-155.000.

Glassey, Stephen F., to Caterpillar Inc. Hydraulically-actuated electronically-controlled unit injector fuel system having variable control of actuating fluid pressure. 5,191,867, Cl. 123-446.000.

Glaxo Inc.: *See—*
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Glenco-Star, Inc.: *See—*
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Glick, James A.: *See—*
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Glitsch, Inc.: *See—*
Binkley, Michael J., 5,192,466, Cl. 261-114.300.
Petrich, Tullio; and Martinenghi, Paolo, 5,192,465, Cl. 261-97.000.

Gloor, Guy J.; Gallagher, Kevin F.; and Pereira, Abel G., to Croda Inc. Thickening agents for topical preparations. 5,192,462, Cl. 252-174.210.

Gloor, Hans, to Recta AG. Instrument for indicating altitude or direction. 5,191,792, Cl. 73-178.00R.

GMFanuc Robotics Corporation: *See—*
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Goddard, Carl J.; Hanson, Douglas C.; and Schulte, Gary R., to Pfizer Inc. 3-substituted-2-oxindole derivatives as inhibitors of interleukin-1 biosynthesis. 5,192,790, Cl. 514-414.000.

Goedecke, Wolf-Dieter; Moosmann, Bernhard; and Huber, Ralf, to Mannesmann Aktiengesellschaft. Manipulating apparatus for manipulation of workpieces. 5,191,702, Cl. 29-742.000.

Goes, Wilfried: *See—*
Gebauer, Gerhard; Goes, Wilfried; and Rosenauer, Otto, 5,192,198, Cl. 417-383.000.

Goett, Edward P.: *See—*
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Goetz, Norbert: *See—*
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Paeth, David S.; Gross, Stephen W.; and Lyster, Thomas D., 5,191,886, Cl. 128-640.000.

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DiNinno, Frank; Dykstra, Kevin D.; and Heck, James V., 5,192,758, Cl. 514-210.000.
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Massarach, Karl R.; and Heppel, Gunter, 5,192,168, Cl. 405-258.000.

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Hoefler, Andrew C.; Sleap, Julia A.; and Trudso, Jens E., 5,192,575, Cl. 426-573.000.

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Ko, Herbert L., 5,192,951, Cl. 341-133.000.
Mornhinweg, Markus; and Stepper, Fritz, 5,191,889, Cl. 128-662.040.
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Harth, Klaus; and Hibst, Hartmut, 5,193,085, Cl. 369-275.200.
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Bussiere, Raymond, 5,191,942, Cl. 172-286.000.

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Bao, Qi-Bin; and Higham, Paul A., 5,192,326, Cl. 623-17.000.

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Holder, Frederick J.; Lannen, John W.; and Grote, Raymond H., 5,191,663, Cl. 5-424.000.

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Guay, Christopher B.; and Hinton, Joanna P., 5,192,532, Cl. 424-53.000.

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Hirai, Hiroyuki, to Fuji Photo Film Co., Ltd. Light-sensitive material containing silver halide, reducing agent, polymerizable compound and chromium molybdenum or tungsten compound. 5,192,639, Cl. 430-138.000.

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Hirai, Minoru, to Rohm Co., Ltd. Plane-type display apparatus. 5,193,022, Cl. 359-88.000.

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Hiramoto, Kazuyuki; Hara, Hiromi; and Mochizuki, Akihiro, to Makino Milling Maching Co., Ltd. Apparatus for cooling a spindle bearing of a machine. 5,192,139, Cl. 384-476.000.

Hirano, Katsumi; Fujita, Munehisa; and Ohzeki, Katsuhisa, to Fuji Photo Film Co., Ltd. Color diffusion transfer light-sensitive material. 5,192,649, Cl. 430-497.000.

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Iio, Takayuki; Hirano, Takahisa; and Morita, Yoshiharu, 5,192,195, Cl. 417-299.000.

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Hirth, Frederick A. Universal prescription bottle instruction label magnifier. 5,193,032, Cl. 359-804.000.

Hirzel, Suzy C. Curling device head with a holding element. 5,191,907, Cl. 132-107.000.

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Suematsu, Shigenori; Matsumoto, Yoshikane; Sakamoto, Shinichi; and Kobayashi, Hirotaka, 5,192,148, Cl. 400-157.200.

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Arai, Toshiaki; Ohfusa, Yoshitaka; Nagasuka, Hirohumi; and Yoshizawa, Yasufumi, 5,193,172, Cl. 395-425.000.
Bernsen, Johannes A. C.; and Kashioka, Seiji, 5,193,127, Cl. 382-48.000.
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Kasukabe, Susumu; and Takagi, Ryuichi, 5,191,708, Cl. 29-846.000.
Kitajima, Hiroyuki; Yamamoto, Akira; Doi, Takashi; and Nozawa, Masafumi, 5,193,154, Cl. 395-250.000.
Kochi, Masanori; Morikawa, Juichi; Zama, Hideo; and Ibe, Makoto, 5,193,045, Cl. 360-84.000.
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Oosawa, Morio; Ikeda, Takeo; Nezu, Yuji; and Kamijyo, Yosio, 5,192,175, Cl. 409-345.000.
Osakabe, Nobuyuki; Endo, Junji; Tonomura, Akira; Tomita, Masahiro; and Furutsu, Tadao, 5,192,867, Cl. 250-311.000.
Satomi, Shigeki; and Ono, Naoki, 5,193,086, Cl. 370-16.000.
Seto, Yoichi, 5,193,173, Cl. 395-425.000.
Shinmura, Yoshiaki; and Imai, Kazuo, 5,193,171, Cl. 395-425.000.
Soneda, Hideo; Yamashita, Junichi; Fukasawa, Yukihisa; Ueki, Taro; and Izutsu, Sadayuki, 5,192,496, Cl. 376-428.000.
Takeuchi, Ikuo; Kamejima, Kohji; Hamada, Tomoyuki; and Miyake, Norihisa, 5,193,150, Cl. 395-200.000.
Tamaki, Yoshiko; Kitai, Katsuyoshi; Inagami, Yasuhiro; and Tanaka, Yoshikazu, 5,193,186, Cl. 395-650.000.
Tsuyoshi, Toshiaki; Seo, Yosuke; Aoi, Hajime; and Saito, Makoto, 5,193,034, Cl. 360-51.000.
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Sato, Koji, 5,192,497, Cl. 420-581.000.

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Hashimoto, Kouzi; Hasegawa, Atsushi; Kawasaki, Ikuya; and Iwasaki, Kazuhiko, 5,193,159, Cl. 395-375.000.

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Hitchins, Gary O.: *See*—
Matty, Thomas C.; Colclaser, Robert G., III; and Hitchins, Gary O., 5,193,111, Cl. 379-106.000.

Hix, Veldon M.: *See*—
Hunt, Dewey R.; Hix, Veldon M.; Willard, Miles J.; and Dayley, Kyle E., 5,192,574, Cl. 426-549.000.

Hjelmvik, Torbernt: *See*—
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Hoa, Swong V.: *See*—
Kidd, John A.; Hoa, Swong V.; and Janardhanam, Ramesh, 5,191,785, Cl. 73-49.200.

Hoang, Bao N., to Hughes Aircraft Company. Individual target angle measurements in a multiple-target environment. 5,192,955, Cl. 342-80.000.

Hobbs, Philip C. D.: *See*—
Batchelder, John S.; DeCain, Donald M.; and Hobbs, Philip C. D., 5,192,870, Cl. 250-574.000.

Hochberg, Alan M.: *See*—
Zoha, Steven J.; Davis, James E.; Craig, Alan R.; and Hochberg, Alan M., 5,192,510, Cl. 422-82.050.

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Velasquez, David J.; Hodson, Peter D.; and Calhoun, Clyde D., 5,192,548, Cl. 424-443.000.

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Scheler, Siegfried; Buhr, Gerhard; and Bergmann, Klaus, 5,192,640, Cl. 430-169.000.
vom Baur, Hans-Karl W., deceased; Dapperheld, Steffen; Kretschmann, Klaus; Lindner, Werner; Rossmeissl, Rudolf; Milluwe, Hans; and Ullmann, Gerhard, 5,192,411, Cl. 204-280.000.

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Gillberg-Laforce, Gunilla E.; and Pruksarnukul, Josefina L., 5,192,621, Cl. 428-480.000.
Platzer, Stephan J. W., 5,192,630, Cl. 430-11.000.
Shaw, Sonya Y.; and Seeley, Douglas A., 5,192,641, Cl. 430-200.000.

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Helsley, Grover C.; Davis, Larry; and Olsen, Gordon E., 5,192,776, Cl. 514-327.000.
Ong, Helen H.; O'Malley, Gerard J.; Merriman, Michael C.; and Palermo, Mark G., 5,192,789, Cl. 514-411.000.

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Lawton, John A.; Laganis, Evan D.; and Hohman, James L., Jr., 5,193,024, Cl. 359-253.000.

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Ando, Masahiko; Hayabuchi, Masahiro; Tsukamoto, Kazumasa; Tomomatsu, Hideo; Hojo, Yasuo; and Iwatsuki, Kunihiro, 5,191,814, Cl. 74-866.000.

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Leising, Maurice B.; and Holbrook, Gerald L., 5,193,060, Cl. 364-424.100.

Holder, Frederick J.; Lannen, John W.; and Grote, Raymond H., to Hill-Rom Company, Inc. Hospital bed sideguard pads. 5,191,663, Cl. 5-424.000.

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Kuroda, Shigetaka; and Ono, Hiroshi, 5,191,762, Cl. 60-276.000.

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Hattori, Tatsuya; and Akita, Hiroshi, 5,192,480, Cl. 264-204.000.
Sasamoto, Hiroshi; and Ohtaki, Keizaburo, 5,191,707, Cl. 29-783.000.

Honeywell, Inc.: *See—*
Adams, John T., 5,192,874, Cl. 307-125.000.
Kaemmerer, William F.; and Allard, James R., 5,193,143, Cl. 395-51.000.
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Tomino, Ikuo; Ishiguro, Masaharu; Kitahara, Takumi; Yokoyama, Keiichi; Kihara, Noriaki; Kamiya, Joji; Yoshihara, Kanji; Ishii, Masaaki; Mizuchi, Akira; Horikomi, Kazutoshi; Awaya, Akira; and Nakano, Takuo, 5,192,799, Cl. 514-469.000.

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Inagaki, Akira; Kurokawa, Masao; Hasegawa, Hiroyuki; Ishibashi, Toshihiro; Hadano, Hiroaki; Hioki, Takeshi; Toriyama, Yoshimi; Fujita, Kazuo; Takeshima, Yasushi; Wakatsuki, Teruyuki; and Horiuchi, Yasushi, 5,191,778, Cl. 72-13.000.

Horkans, Wilma J.: *See—*
Chang, I-Chia H.; and Horkans, Wilma J., 5,192,403, Cl. 204-153.100.

Horst, Robert W.: *See—*
Cutts, Richard W., Jr.; Norwood, Peter C.; DeBacker, Kenneth C.; Mehta, Nikhil A.; Jewett, Douglas E.; Allison, John D.; and Horst, Robert W., 5,193,175, Cl. 395-575.000.

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Danforth, John W.; Kraus, Jeff L.; Horzewski, Michael J.; and Sharkey, Hugh R., 5,192,295, Cl. 606-194.000.

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Buhler, Marcel; Ho Dac, Thang; Hose, Hugh; and Wood, Robert D., 5,192,565, Cl. 426-49.000.

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Matsushita, Tsutomu; Mihara, Teruyoshi; Hoshi, Masakatsu; and Yao, Kenji, 5,192,989, Cl. 257-342.000.

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Hoshino Gakki Co., Ltd.: *See—*
Hoshino, Yoshiki, 5,192,822, Cl. 84-422.300.

Hoshino, Sumio; Kanamori, Hiroo; Ito, Masumi; Ishikawa, Shinji; and Aikawa, Haruhiko, to Sumitomo Electric Industries, Ltd. Quartz optical waveguide and method for producing the same. 5,193,137, Cl. 385-129.000.

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Hosokawa, Makoto, to Semiconductor Energy Laboratory Co., Ltd. Crystallized polycrystalline semiconductor device. 5,192,991, Cl. 257-51.000.

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Hirota, Kazuhiro; Hosoya, Hisao; Yamada, Yasushi; Miura, Kazunobu; and Nishiki, Akihiko, 5,192,065, Cl. 270-53.000.

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Parker, Sidney G.; Hammerbacher, Milfred D.; Levine, Jules D.; and Hotchkiss, Gregory B., 5,192,400, Cl. 205-124.000.

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Iwai, Hiroshi; Takubo, Yoneharu; and Hotta, Sadayoshi, 5,193,017, Cl. 359-59.000.

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Ort, Werner, 5,192,938, Cl. 338-5.000.

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Houston, Theodore W., to Texas Instruments Incorporated. Control of sense amplifier latch timing. 5,193,076, Cl. 365-233.500.

Howard, Paul L., to Steelcase Inc. Processor support. 5,192,046, Cl. 248-676.000.

Howmedica Inc.: *See—*
Kenna, Robert V., 5,192,324, Cl. 623-16.000.

Howng, Wei-Yean: *See—*
Ramakrishnan, E. S.; Cornett, Kenneth D.; and Howng, Wei-Yean, 5,192,871, Cl. 257-595.000.

Hoya Corporation: *See—*
Amano, Sho, 5,193,096, Cl. 372-13.000.

Hromas, Joe C.: *See—*
Edwards, A. Glen; Huber, Klaus B.; Hromas, Joe C.; Miszewski, Antoni K. L.; and Hill, William M., 5,191,933, Cl. 166-297.000.

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Brockelsby, William K.; Walker, Conrad M. B.; Hryciuk, Michael H.; and Gillis, Donald P., 5,192,954, Cl. 342-42.000.

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Drake, James M.; Fox, Richard; and Bahoric, Andre, 5,192,265, Cl. 604-10.000.

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Beyer, Klaus; Fredericks, Edward C.; Hsu, Louis L.; Kotecki, David E.; and Parks, Christopher C., 5,192,708, Cl. 437-90.000.

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Hubbe, Peter W.: *See—*
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Hubbs, James J.; and Hubbs, Jonathan. Tissue sealant product and method. 5,192,542, Cl. 424-195.100.

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Huber, Klaus B.: *See—*
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Carlson, James J.; and Noyes, Gary R., 5,193,025, Cl. 359-356.000.
Hoang, Bao N., 5,192,955, Cl. 342-80.000.
Kindler, Andrew, 5,192,374, Cl. 148-272.000.
Turner, Raymond L., 5,192,360, Cl. 75-303.000.
Vander Vegt, Stanley J.; and Chan, Darrell W., 5,193,207, Cl. 395-800.000.

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Hughes, Timothy J.: *See—*
Fellingham, George H.; Koll, Lance B.; and Hughes, Timothy J., 5,191,795, Cl. 73-599.000.

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Karasz, Frank E.; and Huh, Wansoo, 5,192,479, Cl. 264-171.000.

Huizenga, Lee M. Storage organizer system and method for installing the same. 5,191,986, Cl. 211-189.000.

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Skurka, John C.; and Hunter, Francis J., 5,192,252, Cl. 474-210.000.

Huprich, Carl A. Method and composition for coating a wound with polyether polyurethane. 5,192,536, Cl. 424-78.080.

Husky Injection Molding Systems Ltd.: *See*—
Arnott, Robin, 5,192,555, Cl. 425-544.000.
Schmidt, Harald, 5,192,556, Cl. 425-549.000.

Husler, Rinaldo: *See*—
Steiner, Eginhard; Beyeler, Harry; Riediker, Martin; Desobry, Vincent; Dietliker, Kurt; and Husler, Rinaldo, 5,192,642, Cl. 430-281.000.

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Duczmal, Tomasz; and Schneider, Jakob H., 5,192,423, Cl. 209-164.000.

Hyll, John, to Baker Hughes Incorporated. Pump impeller release collar assembly. 5,192,142, Cl. 403-16.000.

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Kaufman, Craig A., 5,192,106, Cl. 294-99.200.

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Work, Ray A., III; Milner, Clifford E.; Kintner, Sarah J.; Genthe, James E.; Streila, Stephen; and Iacovella, Charles R., 5,192,613, Cl. 428-363.000.

Ibarrola, Jesus E., to Azkoyen Industrial, S.A. Electronic method and circuit for analyzing analog signals. 5,191,956, Cl. 194-317.000.

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Yamauchi, Hidetoshi; Hasegawa, Haruhisa; and Hiramatsu, Yasuji, 5,192,719, Cl. 501-88.000.

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Mattila, Reijo, 5,192,151, Cl. 400-579.000.

Ide, Fumito; and Nomura, Noriyuki, to Kabushiki Kaisha Toshiba. Image forming apparatus with an image scanning apparatus and an automatic document feeder. 5,192,975, Cl. 355-235.000.

Idemitsu Petrochemical Co., Ltd.: *See*—
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Igarashi, Shunkichi; and Taguchi, Seiichi, to Fuji Photo Film Co., Ltd. Stereographic projecting and recording method and apparatus therefor. 5,192,969, Cl. 355-22.000.

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Iino, Katsuyoshi; Takahashi, Ryoichi; and Takeuchi, Shoji, to Sanden Corporation. Cabinet with door seal. 5,191,736, Cl. 49-484.100.

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Ikegawa, Akihito; Asano, Masaki; Iino, Shuji; and Osawa, Izumi, 5,192,974, Cl. 355-219.000.

Iio, Takayuki; Hirano, Takahisa; and Morita, Yoshiharu, to Mitsubishi Jukogyo Kabushiki Kaisha. Scroll type compressor with separate control block. 5,192,195, Cl. 417-299.000.

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Sakamoto, Manabu, 5,192,599, Cl. 428-82.000.

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Inoue, Yoshifumi; Saito, Kin; Imai, Keisuke; and Arai, Masatoshi, 5,192,364, Cl. 106-287.160.

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Saito, Susumu; Imai, Takashi; Inoue, Satoshi; and Sugizaki, Yutaka, 5,192,637, Cl. 430-109.000.

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Rand, Roy E.; and Tsiang, Eugene Y., 5,193,105, Cl. 378-137.000.

Imazu, Katsuhiro; Sato, Kazuhiro; Ito, Takurou; Kaneko, Shunji; and Sue, Toshio, to Toyo Seikan Kaisha, Ltd. Method of producing a metallic can using a saturated branched chain containing hydrocarbon lubricant. 5,191,779, Cl. 72-46.000.

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Sinor, Lyle T.; and Eatz, Ralph A., 5,192,663, Cl. 435-7.250.

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Chen, Chia-Chung; and Lo, Ray J., 5,192,498, Cl. 422-5.000.

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Indig, Maurice E.; and Hanlon, Jerry F., to General Electric Company. Electrode probe for use in aqueous environments of high temperature and high radiation. 5,192,414, Cl. 204-400.000.

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Lin, Jau-Huei, 5,192,927, Cl. 333-204.000.
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Lang, Hartmut, 5,192,170, Cl. 406-147.000.

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Gillio, Claudio, 5,192,149, Cl. 400-208.000.

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Cooper, Paul; and Sloteman, Donald P., 5,192,193, Cl. 416-186.00R.

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Ko, Moon-Bai; Lee, Chai-Il; and Park, Kwang-Lim, 5,193,079, Cl. 369-37.000.

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Kirmse, Helmut; and Wesselmann, Ludger, 5,192,845, Cl. 219-110.000.

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Beyne, Patrick; and Seon, Georges, 5,192,424, Cl. 210-85.000.

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Miller, Thomas R.; and Frickey, David E., 5,191,823, Cl. 83-857.000.

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Chardon, Jerome, 5,192,837, Cl. 200-61.410.

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Furuya, Junichi, 5,191,789, Cl. 73-118.200.
Kamioka, Hideki; and Shimamura, Masahiko, 5,191,869, Cl. 123-494.000.

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Schnaar, Ronald L., 5,192,508, Cl. 422-70.000.
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Poli, Robert G.; and Johnson, Noel L., 5,192,269, Cl. 604-82.000.

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Blum, Stephen A.; Goodband, Robert D.; Nelssen, Jim L.; and Newton, G. Larry, 5,192,804, Cl. 514-554.000.
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Spisak, Anthony F.; and Kirn, James A., 5,191,964, Cl. 198-447.000.

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Brunn, Rainer; and Klebl, Wolfram, 5,192,850, Cl. 219-130.210.

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Silvestri, James T.; Podhaisky, Todd D.; Klein, Timothy E.; Baker, Mark W.; and Czarnek, David J., 5,192,152, Cl. 400-679.000.

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Thompson, Todd; Kloeckl, Terrance; Costa, Peter F.; Holmes, William A.; and Daulton, Jay, 5,192,288, Cl. 606-143.000.

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Jakobe, Willy, 5,192,030, Cl. 241-101.200.

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Meier, Richard; and Knorr, Herbert, 5,192,021, Cl. 237-2.00A.

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Ko, Herbert L, to Hewlett-Packard Company. Analog-to-digital converter circuits and methods using superconductive elements. 5,192,951, Cl. 341-133.000.

Ko, Moon-Bai; Lee, Chai-Il; and Park, Kwang-Lim, to Inkel Corporation. Compact disk changer. 5,193,079, Cl. 369-37.000.

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Kobayashi, Hiroshi: *See*—
Ono, Kiminori; Matsumoto, Michio; Naono, Hiroyuki; Kobayashi, Hiroshi; and Yamashina, Yuuji, 5,193,117, Cl. 381-71.000.

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Suematsu, Shigenori; Matsumoto, Yoshikane; Sakamoto, Shinichi; and Kobayashi, Hirotaka, 5,192,148, Cl. 400-157.200.

Kobayashi, Jun, to Maeda Industries, Ltd. Multiple sprocket assembly for bicycle. 5,192,250, Cl. 474-162.000.

Kobayashi, Kazushi: *See*—
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Kobayashi, Makoto: *See*—
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Kobayashi, Yukio: *See*—
Tabata, Aki; Tajika, Jun; Inagaki, Hiroshi; Kobayashi, Yukio; and Suzuki, Noritake, 5,191,798, Cl. 73-727.000.

Koch Membrane Systems, Inc.: *See*—
Chang, Jikuo; and Blanck, Robert G., 5,192,437, Cl. 210-321.830.

Koch, Rudolf; Freudiger, Stefan; and Fluckiger, Hans, to Sulzer Brothers Limited; and Protek AG. Implant for a prosthetic ligament and/or tendon replacement. 5,192,322, Cl. 623-13.000.

Kochi, Masanori; Morikawa, Juichi; Zama, Hideo; and Ibe, Makoto, to Hitachi, Ltd. Helical scan type magnetic recording and/or reproducing apparatus having combination type video head and flying erase head for low vibration. 5,193,045, Cl. 360-84.000.

Kodai, Syojiro; and Murakami, Osamu, to Mitsubishi Denki Kabushiki Kaisha. Manufacturing method for thin semiconductor device assemblies. 5,192,682, Cl. 437-219.000.

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Kodama, Kiyofumi, to Mita Industrial Co., Ltd. Image-forming apparatus provided with automatic original delivery mechanism and carrier sheet for use in said apparatus. 5,192,071, Cl. 271-225.000.

Koehn, Robert S. Brake tool. 5,191,690, Cl. 29-275.000.

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Kogure, Toshiharu, to Seiko Seiki Kabushiki Kaisha. Damper device for a motor. 5,191,811, Cl. 74-574.000.

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Mohrs, Klaus; Raddatz, Siegfried; Fruchtmann, Romanis; Kohlsdorfer, Christian; Muller-Peddinghaus, Reiner; and Theisen-Popp, Pia, 5,192,771, Cl. 514-311.000.

Kohno, Keiichi, to Fujitsu Limited. Pulse width modulation control sytem for a motor. 5,193,146, Cl. 388-811.000.

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Ohmori, Kazuo; Seto, Tsuneo; Itakura, Hitoshi; Kohno, Mikio; Nagao, Masaru; Morishita, Tatsuya; and Tanigawa, Masayuki, 5,191,780, Cl. 72-164.000.

Kohonen, Ramio: *See*—
Immonen, Pasi; and Kohonen, Ramio, 5,192,454, Cl. 210-780.000.

Kohwa Mfg. Co.: *See*—
Yajima, Kiyoshi; Suzuki, Takao; Itoh, Masanori; Okuyama, Hitoshi; Uruga, Ken-ichi; and Hirabayashi, Hisanaga, 5,192,940, Cl. 338-308.000.

Koito Manufacturing Co., Ltd.: *See*—
Kawashima, Hiroshi; Watanabe, Takao; and Miura, Akira, 5,192,124, Cl. 362-61.000.

Kojima, Hiroshi; Sakata, Keikichi; Watanabe, Seigo; Mitsukuchi, Yukio; Hashimoto, Shuichi; Kato, Choji; Teshigawara, Mikiro; Furuhashi, Ryoichi; Momoi, Shoji; Inoue, Toshihiko; Uemura, Kazuki; and Oshima, Katsushi, to Yamazaki Mazak Corporation. Machining method for the use of a complex machining machine tool. 5,191,817, Cl. 82-1.110.

Kojima, Shinji; and Kamewada, Makoto, to Singer Company N.V., The. Tension regulating device. 5,191,847, Cl. 112-254.000.

Kojima, Susumu; and Tanaka, Masanori, to Kabushiki Kaisha Nippon Conlux. Card carrier in card reader. 5,192,859, Cl. 235-481.000.

Kojima, Tetsuro; Ishiguro, Shoji; Okada, Hisashi; and Yagihara, Morio, to Fuji Photo Film Co., Ltd. Method for development processing of silver halide photographic. 5,192,647, Cl. 430-448.000.

Kojo, Hitoshi: *See*—
Iwami, Morita; Aramori, Ichiro; Fukagawa, Masao; Isogai, Takao; and Kojo, Hitoshi, 5,192,678, Cl. 435-228.000.

Kolb, David A.: *See*—
Slutter, Warren S.; Marcovecchio, Joseph; Heinz, Robert E.; and Kolb, David A., 5,192,981, Cl. 356-334.000.

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Fellingham, George H.; Koll, Lance B.; and Hughes, Timothy J., 5,191,795, Cl. 73-599.000.

Kollarik nee Hasek, Viktoria: *See*—
Szekely, Istvan; Szego, Andras; Pap, Laszio; Nagy, Lajos; Kollarik nee Hasek, Viktoria; Marmarosi nee Kellner, Katalin; Karadi, Zoltan; Toth, Andrea; and Szucsany, Gyorgy, 5,192,793, Cl. 514-421.000.

Kolleth, Horst, to Krupp Industrietechnik Gesellschaft mit beschrankter Haftung. Load-relieving device for servomotors adjusting the height of cantilever arms. 5,192,180, Cl. 414-719.000.

Kollin, Nancy D.: *See*—
Proxmire, Deborah L.; Jackson, Wanda W.; Kollin, Nancy D.; Mace, Tamara L.; McCormack, Ann L.; and Schlinz, Daniel R., 5,192,606, Cl. 428-284.000.

Kolman, Milan: *See*—
Bohman, Ake, 5,192,397, Cl. 162-55.000.

Koltringer, Peter. Method and apparatus for the diagnosis of polyneuropathy syndromes. 5,191,895, Cl. 128-736.000.

Komagawa, Tooru: *See*—
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Komamura, Toshio, to Yugen Kaisha Somasha. Glasses for stereoscopic viewing. 5,192,960, Cl. 351-41.000.

Komatsu, Hiroshi, to Seiko Epson Corporation. Method of manufacturing a microelectronic vacuum device. 5,192,240, Cl. 445-24.000.

Komatsu, Yasutoshi, to Sony Corporation. Rotary coupler. 5,192,923, Cl. 333-116.000.

Komi, Hideto, to Shimadzu Corporation. Sample-moving automatic analyzing apparatus. 5,192,866, Cl. 250-310.000.

Komora, Donald T.: *See*—
Vickers, Lisa A.; Zyck, Annette P.; Komora, Donald T.; Kirby, Mary P.; and Bernacchi, Donald B., 5,192,567, Cl. 426-92.000.

Komori, Tadashi: *See*—
Ito, Wataru; Miyajima, Shumpei; Hashimoto, Misao; Itoh, Isao; and Komori, Tadashi, 5,192,410, Cl. 204-192.160.

Komori, Takashi, to Sigma, Inc. Keno game playing apparatus. 5,192,076, Cl. 273-138.00A.

Kon, Richard H.; Jasperson, Stephen J.; and Jerila, Torsti T. T., to Stanley Works, The. Display or storage rack for neckties and the like. 5,191,984, Cl. 211-115.000.

Kondo, Asaji: *See*—
Yazawa, Kenichiro; Kitajima, Masao; and Kondo, Asaji, 5,192,693, Cl. 436-169.000.

Kondo, Genki: *See*—
Sumi, Masatomo; Inaki, Shigeo; Takamiya, Yutaka; and Kondo, Genki, 5,191,698, Cl. 29-596.000.

Kondo, Norihiko; Tsuzuki, Mikio; and Miura, Yoshinori, to Toyota Jidosha Kabushiki Kaisha. Method and apparatus for lapping gear teeth while changing at least one of load torque, rotating speeds and rate of teeth contact point movement of the gears. 5,191,739, Cl. 51-287.000.

Kondo, Tetsujiro, to Sony Corporation. Apparatus for decoding digital video data with small memory requirement. 5,193,003, Cl. 358-136.000.

Kondo, Yasuyuki: *See*—
Sogo, Hiroyuki; Kondo, Yasuyuki; and Yamazaki, Kazuhisa, 5,192,926, Cl. 333-204.000.

Konica Corporation: *See*—
Endo, Kiyoshi; and Ishikura, Masami, 5,192,130, Cl. 366-161.000.
Hirota, Kazuhiro; Hosoya, Hisao; Yamada, Yasushi; Miura, Kazunobu; and Nishiki, Akihiko, 5,192,065, Cl. 270-53.000.
Kajiwara, Makoto; and Miyoshi, Masanobu, 5,192,652, Cl. 430-551.000.

Konishi, Masami; Narazaki, Hiroshi; Iwatani, Toshiharu; Nose, Kazuo; Sato, Takashi; Oshima, Hiroo; Kitagawa, Soichi; and Tubono, Hazime, to Kabushiki Kaisha Kobe Seiko Sho. Equipment for adjusting the shape of a running band-like or plate-like metal material in the width direction. 5,193,066, Cl. 364-472.000.

Konotsune, Shiro; Kikuta, Kazutsune; Uetsuki, Masaya; and Hase, Hiroaki, to Chisso Corporation. Flexible copper-applied substrates. 5,192,619, Cl. 428-458.000.

Konrad, Dennis R.: *See*—
Bordsen, Donald T.; Cooper, Thomas P.; Esson, Robert F.; Hill, Michael J.; Jordan, John R.; Kessler, James E.; Konrad, Dennis R.; Sipple, Ralph E.; Swenson, Robert E.; Torgerson, James F.; and vonArx, Anthony P., 5,193,162, Cl. 395-425.000.

Konrad, Thomas: *See*—
Pill, Johannes; Aufenanger, Johannes; Konrad, Thomas; and Junemann, Klaus-Peter, 5,192,806, Cl. 514-562.000.

Koontz, John D.: *See*—
Ingle, Lloyd D.; and Koontz, John D., 5,192,015, Cl. 228-111.000.

Koopmann, Theo: *See*—
Schoroth, Anno; and Koopmann, Theo, 5,191,799, Cl. 73-753.000.

Korea Advanced Institute of Science and Technology: *See*—
Woo, Seong I.; and Kim, Il, 5,192,729, Cl. 502-104.000.

Korsunsky, Iosif: *See*—
Grabbe, Dimitry G.; Korsunsky, Iosif; and Ringler, Daniel R., 5,192,215, Cl. 439-73.000.

Koskelowsky, Joseph: *See*—
Barnes, Michael; and Koskelowsky, Joseph, 5,192,098, Cl. 292-207.000.

Kossow, Alan L.; and Palmer, Alec W. Cleaning device for rotary controls e.g. potentiometers and switches. 5,192,939, Cl. 338-75.000.

Kosugi, Motoki; Matsuoka, Noriyuki; and Takahashi, Toru, to Yamaichi Electric Co., Ltd. Nest type pressure connecting device. 5,192,213, Cl. 439-66.000.

Kotachi, Akiko; and Takechi, Satoshi, to Fujitsu Limited. Pattern-forming method and radiation resist for use when working this pattern-forming method. 5,192,643, Cl. 430-296.000.

Kotecki, David E.: *See*—
Beyer, Klaus; Fredericks, Edward C.; Hsu, Louis L.; Kotecki, David E.; and Parks, Christopher C., 5,192,708, Cl. 437-90.000.

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Uemura, Seiichi; Sohda, Yoshio; Kato, Osamu; Kouno, Takefumi; and Kihara, Tsutomu, 5,192,471, Cl. 264-29.500.

Kouta, Joji, to Jatco Corporation. Control system for automotive automatic transmission. 5,191,815, Cl. 74-866.000.

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Irvin, Scot A.; Merritt, Carleton G.; and Kowalski, Raymond G., 5,192,543, Cl. 425-378.100.

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Gruender, Eugene H., Jr.; and Kraft, Douglas R., 5,193,194, Cl. 395-725.000.

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Krantz, Jeffrey L: *See*—
Bealkowski, Richard; Dayan, Richard A.; Doria, David J.; Kinnear, Scott G.; Krantz, Jeffrey L; Liverman, Robert B.; Sotomayor, Guy G.; Williams, Donald D.; and Vaiskauckas, Gary A., 5,193,161, Cl. 395-400.000.

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Eichlseder, Martin; and Lichtinger, Peter, 5,192,474, Cl. 264-106.000.
Krauter, Allan I., to Welch Allyn, Inc. Variable focus camera for borescope or endoscope. 5,191,879, Cl. 128-4.000.
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Kress, Edward S.; and Carpenter, Gene C., 5,192,398, Cl. 202-227.000.
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Krieger, David A.: *See*—
Bachman, Charles W.; Gane, Christopher P.; Krieger, David A.; Micco, John T.; and Abramovich, Igor, 5,193,182, Cl. 395-600.000.
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Gerke, Dieter; and Muller, Manfred, 5,192,223, Cl. 439-402.000.
Krstenansky, John L.; and Mao, Simon J. T., to Merrell Dow Pharmaceuticals Inc. Cyclic anticoagulant peptides. 5,192,745, Cl. 514-9.000.
Krstenansky, John L., to Merrell Dow Pharmaceuticals Inc. Anticoagulant peptides. 5,192,747, Cl. 514-15.000.
Krueger, Manfred: *See*—
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Kolleth, Horst, 5,192,180, Cl. 414-719.000.
Krzyston, John F.: *See*—
Bourcier, Gilbert F.; Krzyston, John F.; Smith, Philip E.; and Venable, Larry C., 5,192,359, Cl. 75-10.670.
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Kubodera, Seiiti; and Sato, Kozo, to Fuji Photo Film Co., Ltd. Heat transfer dye-providing material. 5,192,737, Cl. 503-227.000.
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Inagaki, Yoshio; and Kubodera, Seiiti, 5,192,738, Cl. 503-227.000.
Kubota Corporation: *See*—
Ishida, Hiroshi; Yamada, Yutaka; Izumi, Kiyoshi; and Moro, Masashi, 5,192,456, Cl. 210-791.000.
Kubota, Saburo, to Roussel Uclaf. Fish stress resistance method. 5,192,754, Cl. 514-170.000.
Kubota, Shoko; and Yamada, Sadayoshi, to Toshiba Kikai Kabushiki Kaisha. Molten metal supplying apparatus. 5,191,929, Cl. 164-500.000.
Kuck, Gary L. Hubcap with vent. 5,192,117, Cl. 301-108.100.
Kuhn, John B., to Deere & Company. Mulching mower apparatus. 5,191,756, Cl. 56-17.500.
Kuiper, Adrianus M. Lampholder assembly. 5,192,218, Cl. 439-226.000.
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Fray, Derek J.; and Kumar, Ramachandran V., 5,192,404, Cl. 204-153.190.
Kumho & Company, Inc.: *See*—
Woo, Young-Kyu, 5,192,078, Cl. 273-232.000.
Kummerer, Karl, to Leonhard Kurz GmbH & Co. Apparatus for decorating articles having a conical surface. 5,192,391, Cl. 156-540.000.
Kunimoto, Toshifumi, to Yamaha Corporation. Apparatus for synthesizing musical tones. 5,192,825, Cl. 84-661.000.
Kunin, Robert: *See*—
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Kunugi, Masanao; Kin, Hidenori; and Handa, Tsuneo, to Seiko Epson Corporation. Toner and a process for preparing thereof. 5,192,636, Cl. 430-109.000.
Kunz, Alfred; Schwenk, Walther; and List, Jorg M., to List AG. Lock for the loading and/or discharging of bulk materials. 5,192,188, Cl. 414-217.000.
Kuo, Eric C. P.: *See*—
Sun, Donald J. C.; and Kuo, Eric C. P., 5,192,079, Cl. 273-232.000.
Kuo, Joseph S.; and Bristol, James E., to American Cyanamid Company. *Haemophilus influenzae* type b oxidized polysaccharide-outer membrane protein conjugate vaccine. 5,192,540, Cl. 424-92.000.
Kuramoto, Koshi; Nakagawa, Tsuguhiko; Shibuya, Satoshi; Ogawa, Takao; Kaihara, Toshikazu; and Furukawa, Kusuo, to Kawasaki Steel Corp. Continuous annealing line having carburizing/nitriding furnace. 5,192,485, Cl. 266-80.000.
Kuraray Co., Ltd.: *See*—
Anazawa, Takanori; Murata, Kazutaka; Akasu, Hiroyuki; and Mimura, Rishichi, 5,192,320, Cl. 623-12.000.
Okada, Koichi; and Omura, Ikuo, 5,192,815, Cl. 523-115.000.
Kurashima, Hideo: *See*—
Takenouchi, Ken; Kurosawa, Kazuyuki; Horiguchi, Makoto; Imatani, Tsuneo; and Kurashima, Hideo, 5,193,014, Cl. 359-3.000.
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Kureshy, Fareed; DeAngelis, Charles A.; and MacIndoe, Robert C., Jr., to P B Diagnostic Systems, Inc. Incubator port closure for automated assay system. 5,192,506, Cl. 422-64.000.
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Takenouchi, Ken; Kurosawa, Kazuyuki; Horiguchi, Makoto; Imatani, Tsuneo; and Kurashima, Hideo, 5,193,014, Cl. 359-3.000.
Kurose, Yoshikazu: *See*—
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Rondy, Gregory J., 5,192,587, Cl. 427-212.000.
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O-Yang, Counde; Walker, Keith A. M.; Kurz, Walter; and Wu, Helen Y., 5,192,749, Cl. 514-45.000.
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Kusano, Takahiro, to Kabushiki Kaisha Toshiba. Active filter having reduced capacitor area but maintaining filter characteristics. 5,192,884, Cl. 307-520.000.
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Sakashita, Hirohiko; Kutsuki, Tetsuo; and Okumura, Naoji, 5,192,996, Cl. 358-21.00R.
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Hollington, Geoffrey A.; Nagelkirk, Robert A.; Allen, Lynne M.; and Kuyper, Mark E., 5,192,114, Cl. 297-304.000.
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Khan, Muhammed A.; VanHove, James M.; Kuznia, Jon N.; and Olson, Donald T., 5,192,987, Cl. 257-183.100.
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Nja, Olav; and Ognedal, Einar, 5,191,941, Cl. 172-224.000.
Kwak, Chun S.: *See*—
Chung, Dae B.; Suh, Sung S.; and Kwak, Chun S., 5,192,277, Cl. 604-360.000.
Kyokuto Kaikatsu Kogyo Co., Ltd.,: *See*—
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Elmer, Arthur E. H., 5,191,915, Cl. 137-625.270.
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Loya, Noe T., 5,191,945, Cl. 172-759.000.
La Barre, Leo E.: *See*—
Kellerman, Rudolph J.; Perra, Arthur E.; La Barre, Leo E.; and Lemos, Walter G., 5,191,861, Cl. 123-46.0SC.
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Salonen, Eeva-Marjatta, 5,192,665, Cl. 435-18.000.

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Lair, Jean-Pierre: *See*—
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Lam, Son H., to International Business Machines Corporation. Methods and apparatus for maintaining cache integrity whenever a CPU write to ROM operation is performed with ROM mapped to RAM. 5,193,170, Cl. 395-425.000.

Lambert, Frederic: *See*—
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Landa, Benzion; Ben-Auraham, Peretz; Hall, Joseph; and Gibson, George A., to Spectrum Sciences B.V. Toner for use in compositions for developing latent electrostatic images, method of making the same, and liquid composition using the improved toner. 5,192,638, Cl. 430-137.000.

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Lang, Gerard; Forestier, Serge; Malle, Gerard; and Junino, Alex, to L'Oreal. Cosmetic temporary coloring compositions containing protein derivatives. 5,192,332, Cl. 8-405.000.

Lang, Hartmut, to Infotronic Vertriebsgesellschaft fuer Kommunikationssysteme mbH. Pneumatic tube conveyor station. 5,192,170, Cl. 406-147.000.

Lang, Roger D.: *See*—
Brouwer, Charles W.; Lang, Roger D.; and Perrino, Thomas W., 5,192,032, Cl. 242-35.50A.

Lannen, John W.: *See*—
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Lanter, David. Method and means for lineage tracing of a spatial information processing and database system. 5,193,185, Cl. 395-600.000.

Lapidus, Herbert, to Combe Incorporated. Aqueous progressive hair colorant having soluble sulfur source and amphoteric surfactant. 5,192,333, Cl. 8-405.000.

Laprade, Maria; and Sterling, Thomas L., to Harris Corporation. Activity monitor system non-obtrusive statistical monitoring of operations on a shared bus of a multiprocessor system. 5,193,179, Cl. 395-575.000.

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Larratt, Dennis R.: *See*—
Forte, Don A.; Kates, Jeffrey T.; and Larratt, Dennis R., 5,192,598, Cl. 428-71.000.

Larson, Gregory P.; and Wilkinson, Frank, to Advanced Matrix Technology, Inc. Font cartridge extender with spring hook latch. 5,193,052, Cl. 361-395.000.

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Schofield, Kenneth; Gahan, Richard J.; Schierbeek, Kenneth L.; and Larson, Mark L., 5,193,029, Cl. 359-604.000.

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Latos, Thomas S.: *See*—
Galloway, Gary L.; Latos, Thomas S.; and Roe, Derrick, 5,193,054, Cl. 363-72.000.

Laturner, John F., to Energy Absorption Systems, Inc. Vehicle crash barrier. 5,192,157, Cl. 404-6.000.

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Lautenschlager, Horst; and Lautenschlager, Gerhard W., 5,191,677, Cl. 16-257.000.

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Laval, Jean-Marc: *See*—
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Lawassani, Abdi: *See*—
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Lawrence, Gregory A.: *See*—
Cahlander, Robert L.; Carroll, David W.; Hollingsworth, Alfred C.; Lawrence, Gregory A.; and Rudesill, Brian R., 5,191,918, Cl. 141-1.000.

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Harrison, Gavin B. L.; Dempster, Robert P.; Rickard, Michael D.; Lightowlers, Marshall W.; Heath, David D.; Lawrence, Stephen B.; and O'Hoy, Kim L., 5,192,538, Cl. 424-88.000.

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Lay, Kenneth W., to General Electric Company. Method of forming a tape of the high temperature oxide superconductors. 5,192,739, Cl. 505-1.000.

Layport, John L., to Sippican, Inc. Carrier. 5,191,790, Cl. 73-170.330.

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Leary, Susan L.: *See*—
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Ledford, Charles D.: *See*—
Romig, Frederick W.; and Ledford, Charles D., 5,191,742, Cl. 52-79.900.

Ledford, Jim D. Ladder rung supported combination platform and utensil rack. 5,191,954, Cl. 182-129.000.

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Barlow, George J.; Keeley, James W.; Lemay, Richard A.; Shen, Jian-Kuo; Ledoux, Robert V.; Joyce, Thomas F.; Kelly, Richard P.; Miller, Robert C.; and Ledoux, Frances A., 5,193,181, Cl. 395-575.000.

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Lee, Byung C., to Gold Star Co., Ltd. Scroll-type compressor with an apparatus for restraining compressed fluid from being leaked. 5,192,202, Cl. 418-55.500.

Lee, Chai-Il: *See*—
Ko, Moon-Bai; Lee, Chai-Il; and Park, Kwang-Lim, 5,193,079, Cl. 369-37.000.

Lee, Chung J.: *See*—
Hirsch, Tom J.; Lin, Charles W. C.; Lee, Chung J.; and Muller, Heinrich G. O., 5,192,581, Cl. 427-556.000.

Lee, Clyde L.: *See*—
Surjaatmadja, Jim B.; and Lee, Clyde L., 5,192,509, Cl. 422-75.000.

Lee, Henry E., to Westinghouse Electric Corp. Cascaded complementary phase code compressor. 5,192,956, Cl. 342-204.000.

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Lee, Roger R.; and Gonzalez, Fernando, to Micron Technology, Inc. Method of making tungsten contact core stack capacitor. 5,192,703, Cl. 437-52.000.

Lee, Ruojia, to Micron Technology, Inc. Cell structure for erasable programmable read-only memories. 5,192,872, Cl. 257-315.000.

Lee, Sung J., to Biofor, Ltd. Fused ring heterocycles and pharmaceutical compositions containing same. 5,192,791, Cl. 514-418.000.

Lee, Tze-Fun; and Wang, Lawrence C., to University of Alberta. Compositions and methods for improving cold tolerance in animals and humans. 5,192,740, Cl. 514-2.000.

Lee, Woo Y., to Dong A Electric Parts Co., Ltd. Resistance unit for motor speed control. 5,192,937, Cl. 337-104.000.

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LeGalloudec, Odette: *See*—
Raizon, Bernard; Evanno, Yannick; and LeGalloudec, Odette, 5,192,797, Cl. 514-452.000.

Leggett & Platt, Incorporated: *See*—
Wiecek, Glenn N., 5,192,113, Cl. 297-85.000.

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Leiserson, Steven B. Rechargeable battery conversion kit. 5,192,904, Cl. 320-2.000.

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Lemon, Neldon L. Apparatus for determining wiring orientation at electrical connectors including plural light indicators and rotary switch. 5,192,912, Cl. 324-504.000.

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Meshel, LeRoy G., 5,191,897, Cl. 128-745.000.
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Chan, Dominic M.; and LeStrange, Raymond J., 5,192,655, Cl. 430-600.000.
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Stocklin, Clay A., 5,193,108, Cl. 379-21.000.
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Pang, Peter K. T.; Lewanczuk, Richard Z.; Benishin, Christine G.; and Kaneko, Toyoii, 5,192,664, Cl. 435-79.000.
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Abbey, Nelson D., III; and Lewandowski, Timothy J., 5,192,013, Cl. 228-13.000.
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Leybold AG: *See—*
Schoroth, Anno; and Koopmann, Theo, 5,191,799, Cl. 73-753.000.
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Teschner, Gotz, 5,192,894, Cl. 315-111.210.
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Loewy, Zvi G.; Ip, Nancy Y.; Baum, Howard J.; Leary, Susan L.; and van de Stadt, Ingrid L. M., 5,192,658, Cl. 435-6.000.
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Harrison, Gavin B. L.; Dempster, Robert P.; Rickard, Michael D.; Lightowlers, Marshall W.; Heath, David D.; Lawrence, Stephen B.; and O'Hoy, Kim L., 5,192,538, Cl. 424-88.000.
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Lunn, Gerald K.; Chan, Man; and Lin, Chi M., 5,193,217, Cl. 455-79.000.
Lin, Chin-Liang. Elongated clamp. 5,192,104, Cl. 294-19.100.
Lin, Jau-Huei, to Industrial Technology Research Institute. Microstrip spur-line broad-band band-stop filter. 5,192,927, Cl. 333-204.000.
Lin, Tai-Shun: *See—*
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Krumm, Valentin; and Hiemer, Armin, 5,191,917, Cl. 139-380.000.
Maierhofer, Hans-Juergen; Eberle, Willi; and Mueller, Adolf, 5,191,686, Cl. 26-71.000.
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Kleineisel, Gustav; and Deininger, Horst, 5,191,950, Cl. 180-6.300.
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Link, William T.: *See—*
Uken, William D.; and Link, William T., 5,193,132, Cl. 385-32.000.
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Radhakrishnan, Ramachandran; Mihalko, Paul J.; and Abra, Robert M., 5,192,528, Cl. 424-45.000.
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Lipscomb, John D., to Amoco Corporation. Method for oxidizing hydrocarbons with a hydroxylase from a methane monooxygenase. 5,192,672, Cl. 435-155.000.
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Lisi, Dominic A.; and Deilus, Robert L., to ITT Corporation. Tetherable frame for, and in combination with, a submersible mixer. 5,192,047, Cl. 248-676.000.
Liskow, Uwe, to Robert Bosch GmbH. Apparatus for injecting a fuel-gas mixture. 5,191,871, Cl. 123-531.000.
List AG: *See—*
Kunz, Alfred; Schwenk, Walther; and List, Jorg M., 5,192,188, Cl. 414-217.000.
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Little, Barry M.: *See—*
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Abbink, Henry C.; Sakaida, Daryl K.; and Wyse, Stanley F., 5,191,794, Cl. 73-514.000.
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Chang, Chin L.; Niebauer, Daniel A.; and Choi, Albert, 5,193,136, Cl. 385-129.000.
Liu, John: *See—*
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Liu, Kun-Hei. Folding toy baby cart. 5,192,091, Cl. 280-644.000.
Liu, Wun-hui. Protractor. 5,191,714, Cl. 33-391.000.
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Gewelber, Ytzhak, 5,192,623, Cl. 428-593.000.
Lockheed Missiles & Space Company, Inc.: *See—*
McCloskey, Thomas E., 5,192,147, Cl. 403-322.000.
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Lokken, Oddvin. Napkin- or drape-holder. 5,191,681, Cl. 24-9.000.
Longfield, Ross N., to Beneficial Franchise Company Inc. Electronic income tax refund early payment system with means for creating of a new deposit account for receipt of an electronically transferred refund from the IRS. 5,193,057, Cl. 364-408.000.
Lonza Inc.: *See—*
Blum, Stephen A.; Goodband, Robert D.; Nelssen, Jim L.; and Newton, G. Larry, 5,192,804, Cl. 514-554.000.
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Grollier, Jean-Francois; Rosenbaum, Georges; and Richoux, Isabelle, 5,192,544, Cl. 424-401.000.
Gueret, Jean-Louis H., 5,192,153, Cl. 401-4.000.

Lang, Gerard; Forestier, Serge; Malle, Gerard; and Junino, Alex, 5,192,332, Cl. 8-405.000.

Lorenz, Gisela: *See*—
Zipperer, Bernhard; Goetz, Norbert; Buschmann, Ernst; Sproesser, Linhard; Ammermann, Eberhard; and Lorenz, Gisela, 5,192,767, Cl. 514-277.000.

Lorimer, D'Arcy H.; and Bercaw, Craig A., to Applied Materials, Inc. Corrosion-resistant protective coating on aluminum substrate and method of forming same. 5,192,610, Cl. 428-33.600.

Love, Walter F.: *See*—
Araujo, Roger J.; and Love, Walter F., 5,192,402, Cl. 204-130.000.

Loya, Noe T., to L & M Industries. Plow debris deflector. 5,191,945, Cl. 172-759.000.

LUCKY Ltd.: *See*—
Chung, Dae B.; Suh, Sung S.; and Kwak, Chun S., 5,192,277, Cl. 604-360.000.

Ludlam, Henry S.: *See*—
Belsan, Jay S.; Radeseal, George A.; Milligan, Charles A.; Pedersen, Mogens H.; Kitchen, John F.; and Ludlam, Henry S., 5,193,184, Cl. 395-600.000.

Ludwig, Craig S., to Brod & McClung-Pace Co. Directional air diffuser panel for clean room ventilation system. 5,192,348, Cl. 55-385.200.

Lunazzi, Alessandro, to Mikron S.p.A. Bologna. Gear hobbing machine with arborless support for hob. 5,192,172, Cl. 409-11.000.

Lunn, Gerald K.; Chan, Man; and Lin, Chi M., to Motorola, Inc. Low voltage IC for voice operated transceiver. 5,193,217, Cl. 455-79.000.

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Hakkarainen, Susan S.; Hanna, Robert S.; Jacoby, Elliot G.; and Taylor, Robert F., III, 5,191,971, Cl. 200-550.000.

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Lyon, Leland H.; and Kimberlin, Robert R., to Ingersoll-Rand Company. Wrap spring clutch for percussive apparatus. 5,191,946, Cl. 173-97.000.

Lysfjord, Roger: *See*—
Juel, Anders; Strand, Olaf; Omdal, Bjarne; and Lysfjord, Roger, 5,192,133, Cl. 383-7.000.

Lyskovzev, Valentin V.: *See*—
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Lyster, Thomas D.: *See*—
Paeth, David S.; Gross, Stephen W.; and Lyster, Thomas D., 5,191,886, Cl. 128-640.000.

Ma, Hsi-Kuang. Sliding box type pen base computer with LCD and mother board in a base and with battery, power supply, and disk drives in a sliding box. 5,193,051, Cl. 361-393.000.

Ma, Yinfa: *See*—
Yeung, Edward S.; Koutny, Lance B.; Hogan, Barry L.; Cheung, Chan K.; and Ma, Yinfa, 5,192,407, Cl. 204-182.800.

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Mac Valves, Inc.: *See*—
Neff, James A.; Fagerlie, Richard A.; Janssen, Eric P.; and Robert, Michael E., 5,192,936, Cl. 335-281.000.

MacDonald, Richard E.: *See*—
Richey, Steven M.; MacDonald, Richard E.; and Mathis, Jimmy F., 5,193,138, Cl. 392-341.000.

Mace, Tamara L.: *See*—
Proxmire, Deborah L.; Jackson, Wanda W.; Kollin, Nancy D.; Mace, Tamara L.; McCormack, Ann L.; and Schlinz, Daniel R., 5,192,606, Cl. 428-284.000.

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Wilson, Colin D.; MacGregor, Alexander F.; and McKillop, Alistair J., 5,191,961, Cl. 198-392.000.

Machinguchi, Yoshihiro: *See*—
Yokota, Teppei; Morioka, Susumu; Machinguchi, Yoshihiro; and Yamada, Yuji, 5,193,208, Cl. 455-4.100.

MacIndoe, Robert C., Jr.: *See*—
Kureshy, Fareed; DeAngelis, Charles A.; and MacIndoe, Robert C., Jr., 5,192,506, Cl. 422-64.000.

Macky, Barry L.: *See*—
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Maclay, G. J.: *See*—
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MacLeod, Alan D.: *See*—
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Frankel, Gerald S.; Khandros, Igor Y.; and Madakson, Peter B., 5,192,618, Cl. 428-457.000.

Madan, Sanjeev; Kogelnik, Hans-Joachim; and Daneshvar, Majid, to Miles Inc. Process for the preparation of a polyurethane structural support. 5,192,594, Cl. 427-421.000.

Maeba, Masayoshi: *See*—
Otsuki, Masatoshi; Kawanishi, Yasuyoshi; Sawada, Kenji; Kaido, Yoshinori; Mizumura, Takayuki; and Maeba, Masayoshi, 5,192,944, Cl. 340-765.000.

Maeda Industries, Ltd.: *See*—
Kobayashi, Jun, 5,192,250, Cl. 474-162.000.

Maeda, Kenji: *See*—
Tomiyama, Takeshi; Endo, Masahiro; Hashimoto, Sadaaki; and Maeda, Kenji, 5,192,611, Cl. 428-354.000.

Maeda, Koji; and Kawamura, Shinji, to NEC Corporation. Mobile telephone system for producing busyness information for speech channels. 5,193,209, Cl. 455-34.200.

Maeda, Yoshiyuki: *See*—
Murata, Masaichi; Kuriyama, Hiroaki; Maeda, Yoshiyuki; Yamashita, Megumi; and Ueda, Kouzou, 5,192,189, Cl. 414-477.000.

Maekawa, Yoshihiko: *See*—
Oshima, Tairo; Sakashita, Hitoshi; Matsumoto, Hakuji; and Maekawa, Yoshihiko, 5,192,674, Cl. 435-194.000.

Mag Chem Inc.: *See*—
Gamache, Roger A., 5,191,803, Cl. 73-865.800.

MagneTek, Inc.: *See*—
Karlin, Richard A.; and Bittar, Hussein I., 5,192,905, Cl. 320-23.000.

Maholland, Michael K.: *See*—
Fu, Chia-Min; and Maholland, Michael K., 5,192,724, Cl. 502-28.000.

Mahoney, James V., to Xerox Corporation. Local hierarchical processing focus shift within an image. 5,193,125, Cl. 382-41.000.

Maierhofer, Hans-Juergen; Eberle, Willi; and Mueller, Adolf, to Lindauer Dornier GmbH. Apparatus for protecting stretching rollers in synthetic film stretchers. 5,191,686, Cl. 26-71.000.

Mailliet, Pierre: *See*—
Metz, Jean; Mailliet, Pierre; and Radoux, Henri, 5,192,489, Cl. 266-271.000.

Maingot, Georges F. D., to Mesure Controle et Automatisme Mestrole. Device for gauging a volumetric meter. 5,191,782, Cl. 73-3.000.

Mainz, Eric L.; Beard, William Q., Jr.; Hirschmann, Robert P.; Little, Barry M.; and Smith, Earl B., to Vulcan Materials Company. Oxychlorination catalysts comprising copper chloride supported on rare-earth-modified alumina, process for making such catalysts, and oxychlorination processes using them. 5,192,733, Cl. 502-225.000.

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Breskin, Amos; Chechik, Rachel; and Majewski, Stanislaw, 5,192,861, Cl. 250-214.0VT.

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Makino Milling Maching Co., Ltd.: *See*—
Hiramoto, Kazuyuki; Hara, Hiromi; and Mochizuki, Akihiro, 5,192,139, Cl. 384-476.000.

Malen, Charles; de Nanteuil, Guillaume; and Colpaert, Francis, to Adir et Compagnie. New aminomethylpiperidine compounds. 5,192,775, Cl. 514-321.000.

Mallary, Michael: *See*—
Smith, Alan B.; and Mallary, Michael, 5,193,039, Cl. 360-113.000.

Malle, Gerard: *See*—
Lang, Gerard; Forestier, Serge; Malle, Gerard; and Junino, Alex, 5,192,332, Cl. 8-405.000.

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Pipes, David W., 5,192,526, Cl. 424-1.100.

Malmstrom, Rolf; and Petersson, Stig, to A. Ahlstrom Corporation. Apparatus for treating zinc concentrates. 5,192,487, Cl. 266-201.000.

MAN Nutzfahrzeuge Aktiengesellschaft: *See*—
Meier, Richard; and Knorr, Herbert, 5,192,021, Cl. 237-2.00A.
Mertens, Armin; Hinze, Peter; Ebert, Rudolf; and Grach, Herbert, 5,192,102, Cl. 280-766.100.

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Fuhrmann, Hartmut; and Hirt, Alfred, 5,191,834, Cl. 101-130.000.
John, Thomas, 5,191,703, Cl. 29-895.320.

Manabe, Sachiko: *See*—
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Manalastas, Pacifico V.: *See*—
McDougall, Lee A.; Newlove, John C.; Manalastas, Pacifico V.; and Drake, Evelyn N., 5,192,615, Cl. 428-402.240.

Mangini, Daniel J.; and Morris, John P., to Glenco-Star, Inc. Food preparation table having a refrigerated ingredient zone. 5,191,769, Cl. 62-258.000.

Mannesmann Aktiengesellschaft: *See*—
Goedecke, Wolf-Dieter; Moosmann, Bernhard; and Huber, Ralf, 5,191,702, Cl. 29-742.000.

Manton, John: *See*—
Kinney, Daryl F.; Drogaris, Anthony N.; Mills, Christopher H.; Kahaiyan, Michael; and Manton, John, 5,193,158, Cl. 395-375.000.

Mantovan, Gianfranco; and Fay, Gianfranco, to Pomini Farrel S.p.A. Process and facility for shearing to length steel bars coming from a rolling mill. 5,191,818, Cl. 83-27.000.

Manville Corporation: *See*—
Forte, Don A.; Kates, Jeffrey T.; and Larratt, Dennis R., 5,192,598, Cl. 428-71.000.

Mao, Simon J. T.: *See*—
Krstenansky, John L.; and Mao, Simon J. T., 5,192,745, Cl. 514-9.000.

Marcel, Raymond C., Jr. Pollution pad reconditioning/recycling system. 5,192,455, Cl. 210-787.000.

Marcovecchio, Joseph: *See*—
Slutter, Warren S.; Marcovecchio, Joseph; Heinz, Robert E.; and Kolb, David A., 5,192,981, Cl. 356-334.000.

Mardus, Claus; Duckeck, Ralf; and Bragas, Peter, to Robert Bosch GmbH. Vehicular radio receiver with standard traffic problem database. 5,193,214, Cl. 455-54.200.

Marenchic, Ingrid G.: *See*—
Taylor, Richard F.; Marenchic, Ingrid G.; and Cook, Edward J., 5,192,507, Cl. 422-68.100.

Marhold, Albrecht: *See*—
Uhr, Hermann; Marhold, Albrecht; Andres, Peter; Erdelen, Christoph; Wachendorff-Neumann, Ulrike; and Stendel, Wilhelm, 5,192,794, Cl. 514-422.000.

Mark IV Transportation Products Corporation: *See*—
Brockelsby, William K.; Walker, Conrad M. B.; Hryciuk, Michael H.; and Gillis, Donald P., 5,192,954, Cl. 342-42.000.

Markovitz, Scott H. Storage container for storing compact disc cases and multi-disc changer cartridge. 5,191,977, Cl. 206-309.000.

Markstein, Peter W.: *See*—
Janczyn, Joyce M.; and Markstein, Peter W., 5,193,190, Cl. 395-700.000.

Markus, Reuven: *See*—
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Marmarosi nee Kellner, Katalin: *See*—
Szekely, Istvan; Szego, Andras; Pap, Laszlo; Nagy, Lajos; Kollarik nee Hasek, Viktoria; Marmarosi nee Kellner, Katalin; Karadi, Zoltan; Toth, Andrea; and Szucsany, Gyorgy, 5,192,793, Cl. 514-421.000.

Marmonier, Andre: *See*—
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Marr, Roy J.: *See*—
Pavely, Andrew P.; Marr, Roy J.; Foskett, Peter S.; and White, David M., 5,191,695, Cl. 29-451.000.

Marschall, David M.: *See*—
Tiab, Djebbar; Marschall, David M.; and Altunbay, Mehmet H., 5,193,059, Cl. 364-422.000.

Martakos, Paul: *See*—
Herweck, Steve A.; Karwoski, Theodore; and Martakos, Paul, 5,192,310, Cl. 623-1.000.

Martin, Frank: *See*—
Craft, Barrie G.; Doll, Peter; and Martin, Frank, 5,191,810, Cl. 74-572.000.

Martin, John M. Means for reducing the criminal usefulness of hand weapons. 5,192,818, Cl. 42-70.010.

Martin Marietta Magnesia Specialties Inc.: *See*—
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Aono, Hiroshi; Yokomakura, Mitsunori; Nagata, Keiji; Kurata, Takatsugu; and Imai, Kanji, 5,192,892, Cl. 313-422.000.
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Mohri, Masanari; Mizuno, Osamu; and Nakamura, Tohru, 5,193,080, Cl. 369-244.000.
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Matuzawa, Kouzaburo; and Fujii, Atsushi, 5,192,484, Cl. 264-555.000.

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Babal, Surendra M.; Field, Kenneth S.; and Maurin, Michael B., 5,192,784, Cl. 514-398.000.

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Rusconi, John, 5,192,064, Cl. 270-52.500.

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Gardner-Chavis, Ralph A.; and May, Michael P., 5,192,515, Cl. 423-213.200.

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Hochlowski, Jill E.; Buytendorp, Mark H.; Chen, Randal H.; McAlpine, James B.; Therisult, Robert J.; Jackson, Marianna; and Karwowski, James P., 5,192,748, Cl. 514-25.000.

McAvoy, Bruce R.: *See*—
Chantry, Peter J.; Weinert, Robert W.; Tallisa, Salvador H.; McAvoy, Bruce R.; and Smith, Thomas J., Jr., 5,192,921, Cl. 331-3.000.

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McGough, Gerald B., to Quadrum Telecommunications, Inc. Protective plate for paystation anti-stuffing device. 5,193,113, Cl. 379-437.000.

McGrath, Charles M.; and Grudzien, Jennipher. Probe clip in situ assay apparatus. 5,192,503, Cl. 422-57.000.

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McMillin, Carl K.: *See*—
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Jones, Jay J., 5,191,741, Cl. 53-475.000.
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McNicol, John D.; and Harman, Stephen G., to Northern Telecom Limited. Adaptive phase control for a power amplifier predistorter. 5,193,224, Cl. 455-126.000.

McOnie, Robert. Rubber drive system mechanical seal. 5,192,085, Cl. 277-81.00S.

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McWhorter, Edward M. Dual cycle engine. 5,191,858, Cl. 123-21.000.

McWilliams, Oliver B. Heavy gas, including radon gas, expeller assembly. 5,191,874, Cl. 126-312.000.

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Sandos, David A.; van Berkum, William F.; and Wickham, Gordon, 5,192,242, Cl. 452-136.000.

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Gamache, Ronald W.; and Tourtellott, John A., 5,193,120, Cl. 382-1.000.

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Squitieri, Anthony C., 5,191,997, Cl. 221-119.000.

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Gafni, Ehud; and Yarnitsky, David, 5,191,896, Cl. 128-742.000.

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Cutts, Richard W., Jr.; Norwood, Peter C.; DeBacker, Kenneth C.; Mehta, Nikhil A.; Jewett, Douglas E.; Allison, John D.; and Horst, Robert W., 5,193,175, Cl. 395-575.000.

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Meidl, John A.: *See*—
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Menasce, Victor J., to Bell-Northern Research Ltd. Cache-memory architecture comprising a single address tag for each cache memory. 5,193,166, Cl. 395-425.000.

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Meoli, Rudy B., Jr.: *See*—
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Merck & Co., Inc.: *See*—
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DiNinno, Frank; Dykstra, Kevin D.; and Heck, James V., 5,192,758, Cl. 514-210.000.

Treiber, Laszlo R.; Colwell, Lawrence F., Jr.; Arison, Byron H.; Dezeny, Georgette; Lingham, Russell B.; Thompson, Wayne J.; and Balani, Suresh K., 5,192,668, Cl. 435-41.000.

Mercuri, Robert A.; Ohneth, Edwin J.; and Lewis, Richard T., to UCAR Carbon Technology Corporation. Epoxy resin bonded flexible graphite laminate and method. 5,192,605, Cl. 428-224.000.

Merion, Michael: *See*—
Petersen, John S.; and Merion, Michael, 5,192,405, Cl. 204-180.100.

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Burel, Jean-Pierre, 5,192,490, Cl. 376-154.000.

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Krstenansky, John L., 5,192,747, Cl. 514-15.000.

Merriman, Michael C.: *See*—
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Merritt, Carleton G.: *See*—
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Mertinooke, Peter E.; Halberstadt, Louis; Muessel, Dan C.; and Perry, Joseph V., to Amesbury Industries, Inc. Method and apparatus for coating a substrate with a liquid resin. 5,192,586, Cl. 427-210.000.

Meshel, LeRoy G., to Lens Plus Corporation. Self-adherent eye occluder. 5,191,897, Cl. 128-745.000.

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Maingot, Georges F. D., 5,191,782, Cl. 73-3.000.

Metacon AG: *See*—
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Weber, Ekkehard, 5,192,349, Cl. 55-522.000.

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Metzeler Schaum GmbH: *See*—
Heitmann, Ulrich; and Rossel, Heribert, 5,192,811, Cl. 521-99.000.

Metzger, James L., Jr.; and Tomiser, Frank, Jr., to Emerson Electric Co. Lever lock hold down mechanism. 5,191,821, Cl. 83-425.000.

Meyer, Lawrence D.: *See*—
Lipton, Lenny; Meyer, Lawrence D.; and Kramer, Frank K., III, 5,193,000, Cl. 358-92.000.

Meyer, Ross E., to United States of America, Energy. Magnetic gripper device. 5,192,155, Cl. 403-410.000.

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Meyers, Harold V.: *See*—
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Meyers, Marc A.: *See*—
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Jain, Mahendra K.; Beacom, Daniel; and Datta, Rathin, 5,192,673, Cl. 435-160.000.

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Hirsch, Tom J.; Lin, Charles W. C.; Lee, Chung J.; and Muller, Heinrich G. O., 5,192,581, Cl. 427-556.000.

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Lee, Ruojia, 5,192,872, Cl. 257-315.000.
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Meehan, Kermit E., 5,192,019, Cl. 229-101.000.

Mikhail, W. E. Michael: *See*—
Ling, Robin S. M.; Gie, Graham A.; Mikhail, W. E. Michael; Elting, James J.; and Slooff, Tom J. J. H., 5,192,283, Cl. 606-93.000.

Mikron S.p.A. Bologna: *See*—
Lunazzi, Alessandro, 5,192,172, Cl. 409-11.000.

Miles Inc.: *See*—
Madan, Sanjeev; Kogelnik, Hans-Joachim; and Daneshvar, Majid, 5,192,594, Cl. 427-421.000.

Miles, Vernon D.: *See*—
Wajer, Mark T.; Smith, David M.; and Miles, Vernon D., 5,192,337, Cl. 44-602.000.

Milianowicz, Stanislaw A.; Klimek, Edward J.; and Krevokuch, Robert N., to Westinghouse Electric Corp. Circuit breaker with shock absorbing mechanism. 5,192,841, Cl. 200-288.000.

Milianowicz, Stanislaw A.; Patel, Nagar J.; Aglietti, William O.; and McDonnell, Brian F., to Westinghouse Electric Corp. Circuit breaker having a trip actuator. 5,192,934, Cl. 335-172.000.

Millar, Huntly D., to Millar Instruments, Inc. Method and assembly for measuring intracranial fluid characateristics. 5,191,898, Cl. 128-748.000.

Millar Instruments, Inc.: *See*—
Millar, Huntly D., 5,191,898, Cl. 128-748.000.

Miller, Allen R.: *See*—
Miller, David J.; Miller, Allen R.; and Miller, Charles P., 5,191,966, Cl. 198-493.000.

Miller, Charles P.: *See*—
Miller, David J.; Miller, Allen R.; and Miller, Charles P., 5,191,966, Cl. 198-493.000.

Miller, Daniel A.: *See*—
Fachini, Robert L.; Walser, Kenneth D.; Chance, John H.; and Miller, Daniel A., 5,191,757, Cl. 56-30.000.
Fachini, Robert M.; Chance, John H.; Miller, Daniel A.; and Brandt, David, 5,191,753, Cl. 56-10.900.

Miller, David J.; Miller, Allen R.; and Miller, Charles P., to Miller Formless Co., Inc. Apparatus and method for unloading bulk materials. 5,191,966, Cl. 198-493.000.

Miller, Edward C.: *See*—
Strout, Robert E., II; Spix, George A.; Miller, Edward C.; Schooler, Anthony R.; Silbey, Alexander A.; Phelps, Andrew E.; Vanderwarn, Brian D.; and Gaertner, Gregory G., 5,193,187, Cl. 395-650.000.

Miller Formless Co., Inc.: *See*—
Miller, David J.; Miller, Allen R.; and Miller, Charles P., 5,191,966, Cl. 198-493.000.

Miller, George A., to Rohm and Haas Company. 1-aralkyl-1,2,4-triazoles. 5,192,783, Cl. 514-383.000.

Miller, Robert C.: *See*—
Barlow, George J.; Keeley, James W.; Lemay, Richard A.; Shen, Jian-Kuo; Ledoux, Robert V.; Joyce, Thomas F.; Kelly, Richard P.; Miller, Robert C.; and Ledoux, Frances A., 5,193,181, Cl. 395-575.000.

Miller, Theodore E., Jr.: *See*—
Quinn, Karen D.; and Miller, Theodore E., Jr., 5,192,691, Cl. 436-161.000.

Miller, Thomas R.; and Frickey, David E., to J. R. Simplot Company. Hydraulic knife assembly with cross-cut knife. 5,191,823, Cl. 83-857.000.

Milligan, Charles A.: *See*—
Belsan, Jay S.; Rudeseal, George A.; Milligan, Charles A.; Pedersen, Mogens H.; Kitchen, John F.; and Ludlam, Henry S., 5,193,184, Cl. 395-600.000.

Millipore Corporation: *See*—
Petersen, John S.; and Merion, Michael, 5,192,405, Cl. 204-180.100.

Mills, Christopher H.: *See*—
Kinney, Daryl F.; Drogaris, Anthony N.; Mills, Christopher H.; Kahaiyan, Michael; and Manton, John, 5,193,158, Cl. 395-375.000.

Mills, Gregory D.: *See*—
Grant, David C. H.; Watkins, Randolph H.; Sluga, Robert M.; Wurgler, Steven J.; Mills, Gregory D.; Berry, Dennis C.; and Fisher, Jerry D., 5,192,340, Cl. 55-23.000.

Mills, Jonathan W., to Motorola, Inc. Reduce instruction set microprocessor. 5,193,206, Cl. 395-800.000.

Mills, Nigel G.; and Gaines, Ronald J., to Mettler-Toledo, Inc. Weighing apparatus with an adjustable ratio of stresses in the load bearing members. 5,191,949, Cl. 177-229.000.

Milluwe, Hans: *See*—
vom Baur, Hans-Karl W., deceased; Dapperheld, Steffen; Kretschmann, Klaus; Lindner, Werner; Rossmeissl, Rudolf; Milluwe, Hans; and Ullmann, Gerhard, 5,192,411, Cl. 204-280.000.

Milner, Clifford E.: *See*—
Work, Ray A., III; Milner, Clifford E.; Kintner, Sarah J.; Genthe, James E.; Strella, Stephen; and Iacovella, Charles R., 5,192,613, Cl. 428-363.000.

Mimura, Rishichi: *See*—
Anazawa, Takanori; Murata, Kazutaka; Akasu, Hiroyuki; and Mimura, Rishichi, 5,192,320, Cl. 623-12.000.

Minami, Yukimasa: *See*—
Hanada, Ryoji; Noro, Masaki; Minami, Yukimasa; and Takasugi, Motohide, 5,192,380, Cl. 152-454.000.

Minamitani, Kunitomo; Yoshioka, Hiromo; and Kakizaki, Shigeaki, to Mazda Motor Corporation. Engine idle control system for vehicle. 5,191,865, Cl. 123-339.000.

Minde, Tor B., to Telefonaktiebolaget L M Ericsson. Excitation pulse positioning method in a linear predictive speech coder. 5,193,140, Cl. 395-2.000.

Minemura, Masahiko; Takahashi, Takayuki; and Kuwata, Satoshi, to Shin-Etsu Chemical Co., Ltd. Silicone grease composition including an organomolybdenum compound. 5,192,458, Cl. 252-42.700.

Miner Enterprises, Inc.: *See*—
Wydra, Neal E.; and Geick, David W., 5,192,057, Cl. 267-153.000.

Miner, Philip E.: *See*—
Garlick, Theodore H., Jr.; and Miner, Philip E., 5,192,529, Cl. 424-49.000.

Mineral Industry Research Organisation: *See*—
Fray, Derek J.; and Kumar, Ramachandran V., 5,192,404, Cl. 204-153.190.

Minister of National Defence of Her Majesty's Canadian Government: *See*—
Pagotto, Jack G.; and Liang, Septimus H. C., 5,192,735, Cl. 502-417.000.

Ministry of International Trade and Industry: *See*—
Tanihara, Masao; Yamada, Hideaki; Nakashima, Toshihide; Omura, Yoshiaki; and Takakura, Koichi, 5,192,684, Cl. 435-240.270.

Minitronics Pty. Ltd.: *See*—
Vossough, Eshan; and Helal, Mohammed A., 5,192,897, Cl. 315-308.000.

Minnesota Mining and Manufacturing Company: *See*—
Babu, Gaddam N., 5,192,616, Cl. 428-407.000.
Moll, Karl-Andreas, 5,192,385, Cl. 156-250.000.
Stofko, John J., Jr.; and Iqbal, Mohammad, 5,192,617, Cl. 428-411.100.

Minnihan, James W.: *See*—
Francis, Robert L.; and Minnihan, James W., 5,192,245, Cl. 460-71.000.
Francis, Robert L.; and Minnihan, James W., 5,192,246, Cl. 460-72.000.

Minolta Camera Kabushiki Kaisha: *See*—
Hamada, Masataka; Ishida, Tokuji; Ishibashi, Kenji; Taniguchi, Nobuyuki; and Ootsuka, Hiroshi, 5,192,966, Cl. 354-402.000.
Ikegawa, Akihito; Asano, Masaki; Iino, Shuji; and Osawa, Izumi, 5,192,974, Cl. 355-219.000.

Minor, Michael K.; and Bierman, Bernie B. Three-point hitch attached grader with adjustable blades. 5,191,943, Cl. 172-393.000.

Misaizu, Iwao: *See*—
Hanada, Kazuyuki; Misaizu, Iwao; Saito, Masashi; Torii, Katsutoshi; and Kuriyama, Katsumi, 5,192,736, Cl. 503-226.000.

Mish, Stanley L.: *See*—
Kilgrow, Bret J.; and Mish, Stanley L., 5,192,483, Cl. 264-510.000.

Mishra, Pravin K., to University of Illinois, The Board of Trustees of the. Dialysis probe. 5,191,900, Cl. 128-769.000.

Misiaszek, Steven M.: *See*—
Perry, John H., Jr.; Person, Abraham; Misiaszek, Steven M.; and Alessi, Donald P., Jr., 5,192,627, Cl. 429-17.000.

Misiti, Domenico: *See*—
Giannessi, Fabio; Ghirardi, Orlando; Misiti, Domenico; Tinti, Maria O.; and Cozzolino, Roberto, 5,192,759, Cl. 514-212.000.

Misner, Ned L.: *See*—
Thompson, Ronald J.; Misner, Ned L.; and Winegard, Michael D., 5,192,136, Cl. 384-123.000.

Mistop, Inc.: *See*—
Kane, David M.; and Fry, William E., 5,191,767, Cl. 60-728.000.

Miszewski, Antoni K. L.: *See*—
Edwards, A. Glen; Huber, Klaus B.; Hromas, Joe C.; Miszewski, Antoni K. L.; and Hill, William M., 5,191,933, Cl. 166-297.000.
Edwards, A. Glen; Huber, Klaus B.; and Miszewski, Antoni K. L., 5,191,936, Cl. 166-297.000.

Mita Industrial Co., Ltd.: *See*—
Iwasaki, Hiroaki; Takesawa, Youichi; Takemoto, Hiroshi; Tanaka, Masashi; Kimoto, Keizo; and Sakuma, Tadashi, 5,192,633, Cl. 430-59.000.
Kodama, Kiyofumi, 5,192,071, Cl. 271-225.000.

Mitek Surgical Products, Inc.: *See*—
Gatturna, Roland F.; Nicholson, James E.; and O'Leary, James, 5,192,303, Cl. 606-232.000.

Mitra, Sekhar: *See*—
Chapura, Francis B.; and Mitra, Sekhar, 5,192,752, Cl. 514-152.000.

Mitsuba Electric Manufacturing Co., Ltd.: *See*—
Nobuo, Yamada; and Kiuchi, Keiji, 5,192,184, Cl. 415-169.100.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Anami, Kenji, 5,193,074, Cl. 365-230.030.
Aoki, Kazuo; and Shichionohe, Daisuke, 5,192,879, Cl. 307-451.000.
Kimura, Masatoshi, 5,192,883, Cl. 307-475.000.
Kodai, Syojiro; and Murakami, Osamu, 5,192,682, Cl. 437-219.000.
Matuo, Masahito; and Yoshida, Toyohiko, 5,193,205, Cl. 395-800.000.
Murakami, Takashi; and Kaneno, Nobuaki, 5,192,711, Cl. 437-129.000.
Nishimura, Yukinobu, 5,191,788, Cl. 73-117.300.
Oda, Masao; and Iwasa, Tatsuya, 5,192,370, Cl. 118-723.000.
Shimoi, Hiroshi; Inadomi, Takafumi; Nakamura, Ryoichi; and Kawahara, Kan, 5,193,033, Cl. 360-31.000.
Shimura, Teruyuki, 5,192,700, Cl. 437-41.000.
Takaishi, Tadao, 5,191,872, Cl. 123-647.000.
Yoshida, Toyohiko; and Matuo, Masahito, 5,193,156, Cl. 395-375.000.

Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Iio, Takayuki; Hirano, Takahisa; and Morita, Yoshiharu, 5,192,195, Cl. 417-299.000.
Kishi, Osamu; Hayashi, Kanji; Furumoto, Hideaki; Miyamoto, Osamu; Morimoto, Kazuo; Akita, Hideki; Yoshida, Yasuyuki; and Wakamoto, Ikuo, 5,191,696, Cl. 29-521.000.
Terado, Sadamu; Hattori, Hidenori; Morimoto, Yoshio; and Yamakami, Yasuhiro, 5,191,927, Cl. 164-452.000.
Ukawa, Naohiko; Okino, Susumu; Takashina, Toru; Onizuka, Masakazu; and Inoue, Kenji, 5,192,518, Cl. 423-244.080.

Mitsubishi Kasei Corporation: *See*—
Ibuka, Toshihiko; and Noguchi, Masahiro, 5,192,994, Cl. 257-766.000.
Kijima, Naoto; and Oguri, Yasuo, 5,192,325, Cl. 623-16.000.

Mitsubishi Kasei Polytec Co.: *See*—
Ibuka, Toshihiko; and Noguchi, Masahiro, 5,192,994, Cl. 257-766.000.

Mitsuboshi Belting Ltd.: *See*—
Hamura, Takeshi; and Tanaka, Hiedaki, 5,192,382, Cl. 156-137.000.

Mitsui, Kiichiro; Ishii, Tooru; Terui, Sadao; Sano, Kunio; and Inoue, Akira, to Nippon Shokubai Kagaku Kogyo, Co., Ltd. Catalyst for water treatment. 5,192,452, Cl. 210-760.000.

Mitsui Petrochemical Industries, Ltd.: *See*—
Iizuka, Hiroshi, 5,192,816, Cl. 523-463.000.
Kaneko, Akira; Higashiya, Nobuo; and Hamasuna, Hiroyuki, 5,191,680, Cl. 19-299.000.
Kioka, Mamoru; Kawakita, Kazumitsu; and Toyota, Akinori, 5,192,731, Cl. 502-110.000.
Niimi, Hiroji; and Moritani, Yoshimitsu, 5,191,987, Cl. 215-1.00C.
Tomino, Ikuo; Ishiguro, Masaharu; Kitahara, Takumi; Yokoyama, Keiichi; Kihara, Noriaki; Kamiya, Joji; Yoshihara, Kanji; Ishii, Masaaki; Mizuchi, Akira; Horikomi, Kazutoshi; Awaya, Akira; and Nakano, Takuo, 5,192,799, Cl. 514-469.000.

Mitsui Toatsu Chemicals, Inc.: *See*—
Kodaka, Kenji; Kinoshita, Katsutoshi; Nakaya, Michihiko; Ebihara, Koichi; Shiraishi, Shirou; Yamada, Eiichi; and Numata, Satoshi, 5,192,778, Cl. 514-341.000.
Shimada, Shizuo; Iwata, Daiji; and Sato, Wakao, 5,192,662, Cl. 435-7.230.

Mitsukuchi, Yukio: *See*—
Kojima, Hiroshi; Sakata, Keikichi; Watanabe, Seigo; Mitsukuchi, Yukio; Hashimoto, Shuichi; Kato, Choji; Teshigawara, Mikiro; Furuhashi, Ryoichi; Momoi, Shoji; Inoue, Toshihiko; Uemura, Kazuki; and Oshima, Katsushi, 5,191,817, Cl. 82-1.110.

Mittelstedt, Matthew T.: *See*—
Bealkowski, Richard; Gerald, Howard; Bharat, Khatri; Mathew, George; Mittelstedt, Matthew T.; Salvetti, Lynda M.; Sudasassi, Richard A.; and Zemanek, Carolyn J., 5,193,174, Cl. 395-500.000.

Mitutoyo Mfg. Co., Ltd.: *See*—
Fujitani, Matusiro; Takaku, Hideo; and Yoda, Yukiji, 5,191,717, Cl. 33-503.000.

Miura, Akira: *See*—
Kawashima, Hiroshi; Watanabe, Takao; and Miura, Akira, 5,192,124, Cl. 362-61.000.

Miura, Kazunobu: *See*—
Hirota, Kazuhiro; Hosoya, Hisao; Yamada, Yasushi; Miura, Kazunobu; and Nishiki, Akihiko, 5,192,065, Cl. 270-53.000.

Miura, Masaaki: *See*—
Miura, Yoshimi; and Miura, Masaaki, 5,191,720, Cl. 33-785.000.

Miura, Toshihiko: *See*—
Umetsu, Sachio; and Miura, Toshihiko, 5,192,560, Cl. 425-175.000.

Miura, Yoshimi; and Miura, Masaaki. Spot welding inspecting apparatus. 5,191,720, Cl. 33-785.000.

Miura, Yoshinori: *See*—
Kondo, Norihiko; Tsuzuki, Mikio; and Miura, Yoshinori, 5,191,739, Cl. 51-287.000.

Miyadera, Hiroshi: *See*—
Muranaka, Yasushi; Yamashita, Hisao; Kato, Akira; and Miyadera, Hiroshi, 5,192,393, Cl. 156-610.000.

Miyagi, Kunihiko, to Kabushiki Kaisha Machida Seisakusho. Optical connector and endoscope with optical connector. 5,193,135, Cl. 385-117.000.

Miyajima, Shumpei: *See*—
Ito, Wataru; Miyajima, Shumpei; Hashimoto, Misao; Itoh, Isao; and Komori, Tadashi, 5,192,410, Cl. 204-192.160.

Miyakawa, Naoomi; Toda, Kazuyuki; Nakamura, Yukiyasu; Tashiro, Minoru; Yamaoka, Yoshihisa; and Kuwayama, Isao, to Yamazaki Mazak Kabushiki Kaisha. Laser machining cell. 5,192,848, Cl. 219-121.820.

Miyake, Norihisa: *See*—
Takeuchi, Ikuo; Kamejima, Kohji; Hamada, Tomoyuki; and Miyake, Norihisa, 5,193,150, Cl. 395-200.000.

Miyake, Tomoyuki; Nakayama, Junichiro; Katayama, Hiroyuki; Takahashi, Akira; and Ohta, Kenji, to Sharp Kabushiki Kaisha. Optical/magnetic composite head having magnetic and optical heads in one integrated unit. 5,193,082, Cl. 369-112.000.

Miyamoto, Masaaki: *See*—
Nakamura, Norio; Ohkawa, Nobuyuki; Oshima, Takeshi; Miyamoto, Masaaki; and Iijima, Yasuteru, 5,192,766, Cl. 514-255.000.
Miyamoto, Osamu: *See*—
Kishi, Osamu; Hayashi, Kanji; Furumoto, Hideaki; Miyamoto, Osamu; Morimoto, Kazuo; Akita, Hideki; Yoshida, Yasuyuki; and Wakamoto, Ikuo, 5,191,696, Cl. 29-521.000.
Miyamoto, Sanpei; and Uehara, Hidetoshi, to Oki Electric Industry Co., Ltd. High-speed differential amplifier. 5,192,878, Cl. 307-362.000.
Miyashiro, Toshio, to Fuji Photo Film Co., Ltd. Method for manufacturing magnetic recording medium. 5,192,584, Cl. 427-129.000.
Miyata, Masanori: *See*—
Kaneko, Tokuharu; Nakayama, Miho; Miyata, Masanori; Honjo, Takeshi; Adachi, Hideki; and Kanazawa, Toshiya, 5,192,977, Cl. 355-313.000.
Miyazaki, Takashi, to NEC Corporation. Microcomputer having easily testable interrupt controller. 5,193,195, Cl. 395-725.000.
Miyoshi, Masanobu: *See*—
Kajiwara, Makoto; and Miyoshi, Masanobu, 5,192,652, Cl. 430-551.000.
Mizoguchi, Akira: *See*—
Uemiya, Takafumi; Uenishi, Naota; Mizoguchi, Akira; and Hattori, Yasuhiro, 5,192,579, Cl. 427-571.000.
Mizuchi, Akira: *See*—
Tomino, Ikuo; Ishiguro, Masaharu; Kitahara, Takumi; Yokoyama, Keiichi; Kihara, Noriaki; Kamiya, Joji; Yoshihara, Kanji; Ishii, Masaaki; Mizuchi, Akira; Horikomi, Kazutoshi; Awaya, Akira; and Nakano, Takuo, 5,192,799, Cl. 514-469.000.
Mizuguchi, Morio: *See*—
Inukai, Hiroshi; Kitahara, Takahiro; Sugioka, Kayoko; and Mizuguchi, Morio, 5,192,635, Cl. 430-108.000.
Mizuhashi, Nobuo: *See*—
Araki, Nobuo; Kagami, Takeji; Chatani, Yoji; Kikuta, Shunichi; Yamada, Iwao; Kamada, Masao; Hashimoto, Seiji; Ueno, Shuichi; Fukui, Takeshi; Nakamura, Takumi; Mizuhashi, Nobuo; and Ishikawa, Yasushi, 5,192,016, Cl. 228-147.000.
Mizumoto, Masao; Ougino, Kouichirou; Shimazaki, Tsutomu; Inoue, Tomohiro; and Okada, Yasuhiro, to Sanyo Electric Co., Ltd.; and Matsushita Electric Industrial Co., Ltd. Velocity/phase controller for DC servo motor. 5,192,902, Cl. 318-561.000.
Mizumura, Takayuki: *See*—
Otsuki, Masatoshi; Kawanishi, Yasuyoshi; Sawada, Kenji; Kaido, Yoshinori; Mizumura, Takayuki; and Maeba, Masayoshi, 5,192,944, Cl. 340-765.000.
Mizuno, Osamu: *See*—
Mohri, Masanari; Mizuno, Osamu; and Nakamura, Tohru, 5,193,080, Cl. 369-244.000.
Mizuno, Yasuo: *See*—
Ito, Yasunobu; and Mizuno, Yasuo, 5,191,953, Cl. 180-197.000.
Mobil Oil Corporation: *See*—
Audeh, Costandi A.; and Rankel, Lillian A., 5,192,421, Cl. 208-309.000.
Chu, Shaw-Chang; and Johnson, James A., 5,192,620, Cl. 428-461.000.
Dessau, Ralph M.; Valyocsik, Ernest W.; and Vartuli, James C., 5,192,728, Cl. 502-66.000.
Moini, Ahmad; and Valyocsik, Ernest W., 5,192,521, Cl. 423-713.000.
Pelensky, Martha T., 5,192,132, Cl. 374-166.000.
Troyer, William H.; and Schoepf, Victor L., 5,192,948, Cl. 340-855.100.
Mochida, Tetsuya; Tsujioka, Shigeo; Jikihara, Masami; Sadamitsu, Hitoshi; and Kobayashi, Kazushi, to Hitachi, Ltd. Process request arbitration system which preferentially maintains previously selected process request upon receipt of a subsequent request of identical priority. 5,193,196, Cl. 395-725.000.
Mochizuki, Akihiro: *See*—
Hiramoto, Kazuyuki; Hara, Hiromi; and Mochizuki, Akihiro, 5,192,139, Cl. 384-476.000.
Mochnal, Dennis: *See*—
Jakway, Janice; and Mochnal, Dennis, 5,192,657, Cl. 435-4.000.
MODcol Corporation: *See*—
Shalon, Yehuda, 5,192,433, Cl. 210-198.200.
Modly, Zoltan M., to Engelhard Corporation. Buff rutile pigment compositions. 5,192,365, Cl. 106-439.000.
Modul-Elektronik AB: *See*—
Insulander, Bjorn; and Hjelmvik, Torbernt, 5,192,855, Cl. 235-381.000.
Moeck, Gerhard, to Schwan-Stabilo Schwanhaeusser GmbH & Co. Applicator insert for an applicator implement. 5,192,154, Cl. 401-198.000.
Moeller, Helen H.: *See*—
Caldwell, Colin S.; and Moeller, Helen H., 5,192,495, Cl. 376-417.000.
Mogami Denki Kabushiki Kaisha: *See*—
Sakamoto, Yoshio; and Haga, Akihiko, 5,191,697, Cl. 29-594.000.
Mohr, Kirby S., to Facet Quantek, Inc. System for dispensing liquid fuel to a motor vehicle fueling station. 5,192,430, Cl. 210-172.000.
Mohri, Masanari; Mizuno, Osamu; and Nakamura, Tohru, to Matsushita Electric Industrial Co., Ltd. Magneto-optical recording medium and apparatus. 5,193,080, Cl. 369-244.000.
Mohrs, Klaus; Raddatz, Siegfried; Fruchtmann, Romanis; Kohlsdorfer, Christian; Muller-Peddinghaus, Reiner; and Theisen-Popp, Pia, to Bayer Aktiengesellschaft. (Quinolin-2-yl-methoxy)phenylacetic acid derivatives containing cyclic substituents. 5,192,771, Cl. 514-311.000.
Moini, Ahmad; and Valyocsik, Ernest W., to Mobil Oil Corp. Synthesis of crystalline silicate ZSM-12. 5,192,521, Cl. 423-713.000.
Moir, David; and O'Connell, Robert M., to Alford Industries Inc. Method of making a cosmetic sampler. 5,192,386, Cl. 156-268.000.
Moiroux, Jacques: *See*—
Bourdillon, Christian; Moiroux, Jacques; Bonnefoy, Jacques P. B.; and Laval, Jean-Marc, 5,192,687, Cl. 435-280.000.
Molecular Technology Corporation: *See*—
Gardner-Chavis, Ralph A.; and May, Michael P., 5,192,515, Cl. 423-213.200.
Molex Incorporated: *See*—
Lenz, William R.; Patel, Arvind; Roberts, James T.; and Schafer, Jack J., 5,192,232, Cl. 439-660.000.
Moll, Karl-Andreas, to Minnesota Mining and Manufacturing Company. Method for the application of lengths of tape to a surface. 5,192,385, Cl. 156-250.000.
Moller, Jens K., to Dow Danmark A/S. Membrane filtration apparatus and method of making a membrane filtration unit. 5,192,434, Cl. 210-227.000.
Molteni, Agostino: *See*—
Ward, William F.; Molteni, Agostino; Ts'ao, Chung-hsin; and Hinz, Joann M., 5,192,524, Cl. 424-1.100.
Momma, Genzo: *See*—
Naruse, Yasuhiro; Momma, Genzo; and Yuzurihara, Hiroshi, 5,192,680, Cl. 437-81.000.
Momoi, Shoji: *See*—
Kojima, Hiroshi; Sakata, Keikichi; Watanabe, Seigo; Mitsukuchi, Yukio; Hashimoto, Shuichi; Kato, Choji; Teshigawara, Mikiro; Furuhashi, Ryoichi; Momoi, Shoji; Inoue, Toshihiko; Uemura, Kazuki; and Oshima, Katsushi, 5,191,817, Cl. 82-1.110.
Momont, Joseph A.: *See*—
Keckler, Kenneth P.; Brandenburg, Bruce L.; Momont, Joseph A.; and Lehmann, Richard W., 5,192,453, Cl. 210-761.000.
Montford, Leslie V.: *See*—
Barrier, James M.; Drey, Mark D.; Montford, Leslie V.; and Tan, Stephen S., 5,192,384, Cl. 156-189.000.
Moore, Karen: *See*—
Zasloff, Michael; Moore, Karen; and Wehrli, Suzanne, 5,192,756, Cl. 514-182.000.
Moorefield, William J., to McDonnell Douglas Corporation. Double-pivoting deployment system for aerosurfaces. 5,192,037, Cl. 244-46.000.
Mooren, Pieter G.: *See*—
Van Der Marel, Piet; and Mooren, Pieter G., 5,192,539, Cl. 424-89.000.
Moosmann, Bernhard: *See*—
Goedecke, Wolf-Dieter; Moosmann, Bernhard; and Huber, Ralf, 5,191,702, Cl. 29-742.000.
Mopa S.r.l.: *See*—
Scheid, Manfred, 5,191,965, Cl. 198-460.000.
Morey, Norval K., to Wood Technology, Inc. Self-propelled compost windrow turning and aerating machine and methods of operating the machine. 5,191,754, Cl. 56-13.300.
Morgan, Nicholas S.: *See*—
Bussell, William R.; and Morgan, Nicholas S., 5,192,363, Cl. 106-218.000.
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Crisler, Kenneth J.; Hiben, Bradley M.; and Van den Heuvel, Anthony, 5,193,091, Cl. 370-95.100.
Davis, Walter L., 5,193,216, Cl. 455-67.700.
Gay, Michael J., 5,192,885, Cl. 307-555.000.
Gruender, Eugene H., Jr.; and Kraft, Douglas R., 5,193,194, Cl. 395-725.000.
Kennedy, Howard L., 5,192,957, Cl. 342-357.000.
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Ramakrishnan, E. S.; Cornett, Kenneth D.; and Howng, Wei-Yean, 5,192,871, Cl. 257-595.000.
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Kuwabara, Tetsuo; and Murakami, Shuji, 5,192,352, Cl. 65-60.530.

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Kita, Hiroaki; Murata, Koichi; and Nakano, Mamoru, 5,192,903, Cl. 318-587.000.

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Kaida, Hiroaki, 5,192,925, Cl. 333-187.000.

Murata, Masaichi; Kuriyama, Hiroaki; Maeda, Yoshiyuki; Yamashita, Megumi; and Ueda, Kouzou, to Kyokuto Kaikatsu Kogyo Co., Ltd.. Car carrier truck used also as dump truck. 5,192,189, Cl. 414-477.000.

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Smith, Kevin W.; Slater, Charles R.; Murphy, Gregory J.; Bales, Thomas O.; Box, John W.; and Scarfone, Frank A., 5,192,298, Cl. 606-205.000.

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Savage, Steven D.; and Haygood, Robert A., 5,192,541, Cl. 424-93.00D.

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Goruganthu, Rama R.; Myers, Thomas K.; and Ross, Andrew W., 5,192,913, Cl. 324-537.000.

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Yokoyama, Kazuaki; Taniguchi, Kiyomi; Sekiguchi, Hisao; and Kaneko, Tomiatsu, 5,192,568, Cl. 426-94.000.

Myracle, James L., Jr., to Philip Morris Incorporated. Process for making wrappers for smoking articles which modify the burn rate of the smoking article. 5,191,906, Cl. 131-365.000.

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Nagamine, Yuko: *See*—
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Nakagawa, Michio: *See*—
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Nakagawa, Tsuguhiko: *See*—
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Nakajima, Hiroshi: *See*—
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Nakamura, Norio; Ohkawa, Nobuyuki; Oshima, Takeshi; Miyamoto, Masaaki; and Iijima, Yasuteru, to Sankyo Company, Limited. N-acryloylpiperazine derivatives, their preparation and their use as PAF antagonists. 5,192,766, Cl. 514-255.000.
Nakamura, Ryoichi: *See*—
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Nakamura, Takumi: *See*—
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Nakamura, Tohru: *See*—
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Wegscheider, Jurgen; Hartmann, Franz; and Zeuschner, Roland, 5,191,962, Cl. 198-415.000.
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Seymour, Kenneth S.; and Sonnenburg, Dennis T., 5,192,069, Cl. 271-35.000.
NDM Acquisition Corp.: *See*—
Cartmell, James V., 5,191,887, Cl. 128-640.000.
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Tamura, Yoshiharu, 5,193,219, Cl. 455-89.000.
Tsubota, Masashi, 5,193,160, Cl. 395-400.000.
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Nelson, Christine C.: *See*—
Cartwright, Mont J.; and Nelson, Christine C., 5,192,293, Cl. 606-172.000.
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Nevidal, Josef: *See*—
Young, Hartley F.; and Nevidal, Josef, 5,191,839, Cl. 104-2.000.
New England Biolabs, Inc.: *See*—
Morgan, Richard D., 5,192,676, Cl. 435-199.000.
New Mexico State University Technology Transfer Corporation: *See*—
Wang, Joseph; and Taha, Ziad H., 5,192,416, Cl. 204-409.000.
Neway Corp.: *See*—
Richardson, Gregory A., 5,192,101, Cl. 280-704.000.
Newingham, John B.: *See*—
Balukin, Richard F.; Newingham, John B.; and Jerina, Frank J., 5,192,118, Cl. 303-15.000.
Newkirk, Franklin D.: *See*—
Reese, Robert J.; and Newkirk, Franklin D., 5,192,002, Cl. 222-108.000.
Newlove, John C.: *See*—
McDougall, Lee A.; Newlove, John C.; Manalastas, Pacifico V.; and Drake, Evelyn N., 5,192,615, Cl. 428-402.240.
Newton, G. Larry: *See*—
Blum, Stephen A.; Goodband, Robert D.; Nelssen, Jim L.; and Newton, G. Larry, 5,192,804, Cl. 514-554.000.
Nezu, Yuji: *See*—
Oosawa, Morio; Ikeda, Takeo; Nezu, Yuji; and Kamijyo, Yosio, 5,192,175, Cl. 409-345.000.
Ngai, Peter Y. Y., to Peerless Lighting Corporation. Lensed luminaire with lens brightness control and method. 5,192,128, Cl. 362-297.000.
Nguyen, Hoc M.: *See*—
Hsu, Chung C.; Nguyen, Hoc M.; and Wu, Sylvia S., 5,192,743, Cl. 514-8.000.
Nguyen, Lo C.: *See*—
Brockway, Robert C.; Dietz, Philip S.; and Nguyen, Lo C., 5,191,970, Cl. 200-335.000.
NHK Spring Co., Ltd.: *See*—
Ojima, Juji; and Hino, Isao, 5,191,683, Cl. 24-20.00R.
Nicholas, Michael G.; and Guthrie, Warren, to ABC Auto Alarms, Inc. Low power RF receiver. 5,193,210, Cl. 455-38.100.
Nichols, David G.: *See*—
Dryadale, Christopher J.; and Nichols, David G., 5,192,354, Cl. 71-9.000.
Nicholson, James E.: *See*—
Gatturna, Roland F.; Nicholson, James E.; and O'Leary, James, 5,192,303, Cl. 606-232.000.
Niebauer, Daniel A.: *See*—
Chang, Chin L.; Niebauer, Daniel A.; and Choi, Albert, 5,193,136, Cl. 385-129.000.
Nihon Shinku Gijutsu Kabushiki Kaisha: *See*—
Inokuti, Yukio; and Ito, Yo, 5,192,585, Cl. 427-172.000.
Niimi, Hiroji; and Moritani, Yoshimitsu, to Mitsui Petrochemical Industries, Ltd. Bottle made of saturated polyesters. 5,191,987, Cl. 215-1.00C.
Nikon Corporation: *See*—
Fujiu, Takamitsu; Tanaka, Akira; Muramatsu, Kenichi; and Hattori, Tetsuo, 5,192,723, Cl. 501-136.000.
Nimberger, Spencer M.: *See*—
Allen, Paul V.; Nimberger, Spencer M.; and Ward, Robert L., 5,191,801, Cl. 73-864.340.
Nintendo Company Limited: *See*—
Inoue, Yoshihiro; and Ashida, Kenichiro, 5,192,082, Cl. 273-435.000.
Nippon CMK Corp.: *See*—
Kawakami, Shin; Haruyama, Satoshi; and Okonogi, Hirotaka, 5,191,709, Cl. 29-852.000.
Nippon Oil Company, Limited: *See*—
Shiozaki, Iwane; Toyooka, Takehiro; and Iida, Shigeki, 5,193,020, Cl. 359-73.000.
Uemura, Seiichi; Sohda, Yoshio; Kato, Osamu; Kouno, Takefumi; and Kihara, Tsutomu, 5,192,471, Cl. 264-29.500.
Nippon Paint Company, Ltd.: *See*—
Oshima, Toshiyuki; Ishibashi, Hideo; Tamura, Ric; Yamamoto, Satoshi; and Izumo, Takaharu, 5,192,814, Cl. 521-163.000.
Nippon Shinyaku Co. Ltd.: *See*—
Yoshikuni, Yoshiaki; Ojima, Nobutoshi; and Mori, Kazuya, 5,192,772, Cl. 514-315.000.
Nippon Shokubai Kagaku Kogyo, Co., Ltd.: *See*—
Mitsui, Kiichiro; Ishii, Tooru; Terui, Sadao; Sano, Kunio; and Inoue, Akira, 5,192,452, Cl. 210-760.000.
Nippon Steel Corporation: *See*—
Anzawa, Norio; and Adachi, Koji, 5,192,203, Cl. 431-2.000.
Araki, Nobuo; Kagami, Takeji; Chatani, Yoji; Kikuta, Shunichi; Yamada, Iwao; Kamada, Masao; Hashimoto, Seiji; Ueno, Shuichi; Fukui, Takeshi; Nakamura, Takumi; Mizuhashi, Nobuo; and Ishikawa, Yasushi, 5,192,016, Cl. 228-147.000.
Inagaki, Akira; Kurokawa, Masao; Hasegawa, Hiroyuki; Ishibashi, Toshihiro; Hadano, Hiroaki; Hioki, Takeshi; Toriyama, Yoshimi; Fujita, Kazuo; Takeshima, Yasushi; Wakatsuki, Teruyuki; and Horiuchi, Yasushi, 5,191,778, Cl. 72-13.000.
Ito, Wataru; Miyajima, Shumpei; Hashimoto, Misao; Itoh, Isao; and Komori, Tadashi, 5,192,410, Cl. 204-192.160.
Kawashima, Hideaki; and Eguchi, Kouhei, 5,192,087, Cl. 279-71.000.
Tanabe, Hiroto; and Yamazaki, Kazumasa, 5,192,376, Cl. 148-520.000.
Terado, Sadamu; Hattori, Hidenori; Morimoto, Yoshio; and Yamakami, Yasuhiro, 5,191,927, Cl. 164-452.000.
Nippon Steel Welding Products & Engineering Co., Ltd.: *See*—
Araki, Nobuo; Kagami, Takeji; Chatani, Yoji; Kikuta, Shunichi; Yamada, Iwao; Kamada, Masao; Hashimoto, Seiji; Ueno, Shuichi; Fukui, Takeshi; Nakamura, Takumi; Mizuhashi, Nobuo; and Ishikawa, Yasushi, 5,192,016, Cl. 228-147.000.
Nippon Telegraph and Telephone Corporation: *See*—
Ichinohe, Makoto; Matai, Masahiro; Umetsu, Shinjiro; and Nishikawa, Seiji, 5,193,220, Cl. 455-89.000.
Nippon Zeon Co., Ltd.: *See*—
Kamiya, Tetsuro; Echigo, Shigeyuki; Matsuda, Takehisa; Yoda, Ryuichiro; and Satoh, Nobuko, 5,192,301, Cl. 606-213.000.
Nippondenso Co., Ltd.: *See*—
Sato, Hirohide; and Hatakeyama, Yoshiya, 5,193,067, Cl. 364-483.000.
Nishida, Masami; Izawa, Masataka; and Tsuchiya, Kunimoto, to Pioneer Electronic Corporation. Converging reflector and liquid crystal display device. 5,192,962, Cl. 353-98.000.
Nishida, Tohru: *See*—
Shinohara, Junichi; Ohno, Yoshimi; Serikawa, Yoshio; and Nishida, Tohru, 5,192,964, Cl. 354-202.000.
Nishii, Osamu: *See*—
Hatano, Susumu; Oishi, Kanji; Kikuchi, Takashi; Saigou, Yasuhiko; Fukuta, Hiroshi; Uchiyama, Kunio; Aoki, Hirokazu; and Nishii, Osamu, 5,193,075, Cl. 365-233.000.
Nishikawa, Seiji: *See*—
Ichinohe, Makoto; Matai, Masahiro; Umetsu, Shinjiro; and Nishikawa, Seiji, 5,193,220, Cl. 455-89.000.
Nishikawa, Toshihiro; Ueda, Shinji; and Usui, Hideo, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive material. 5,192,656, Cl. 430-627.000.
Nishiki, Akihiko: *See*—
Hirota, Kazuhiro; Hosoya, Hisao; Yamada, Yasushi; Miura, Kazunobu; and Nishiki, Akihiko, 5,192,065, Cl. 270-53.000.
Nishimoto, Yoshifumi: *See*—
Kimura, Atsushi; Seki, Hiroyuki; and Nishimoto, Yoshifumi, 5,192,890, Cl. 310-323.000.
Nishimura, Jun, to Nok Kluber Company Ltd. Lubricating oil for use under radioactive or energy irradiation conditions. 5,192,457, Cl. 252-25.000.
Nishimura, Yukinobu, to Mitsubishi Denki Kabushiki Kaisha. Misfire detection device for an internal combustion engine. 5,191,788, Cl. 73-117.300.
Nishioka, Asaaki; Sakai, Etsuo; Kaneko, Tomohiro; and Ogasawara, Masaki, to Denki Kagaku Koygo Kabushiki Kaisha. Cement admixture and cement composition. 5,192,366, Cl. 106-724.000.
Nishiwaki, Seiji; Taketomi, Yoshinao; Uchida, Shinji; Tomita, Takaaki; and Asada, Junichi, to Matsushita Electric Industrial Co., Ltd. Light deflecting device. 5,193,130, Cl. 385-14.000.
Nissan Motor Co., Ltd.: *See*—
Matsushita, Tsutomu; Mihara, Teruyoshi; Hoshi, Masakatsu; and Yao, Kenji, 5,192,989, Cl. 257-342.000.
Murase, Isao; and Shimozono, Akira, 5,193,062, Cl. 364-426.040.
Nissei Jushi Kogyo K.K.: *See*—
Hirata, Hisakazu; Okubo, Kazuyuki; and Kitamura, Motomi, 5,192,557, Cl. 425-589.000.
Nitsch, Wilhelm: *See*—
Findeis, Gunter; Nitsch, Wilhelm; Rauh, Hans-Juergen; Zahn, Wolfgang; Treiber, Helmut; and Schindler, Hans-Georg, 5,192,970, Cl. 355-41.000.
Nja, Olav; and Ognedal, Einar, to Kverneland Klepp AS. Suspension device for a plow. 5,191,941, Cl. 172-224.000.
NKK Corporation: *See*—
Sato, Toshio; Sugiyama, Shunichi; Ishii, Toshio; Nakada, Masayuki; Oosako, Takashi; and Mori, Kentaro, 5,191,928, Cl. 164-466.000.
Nobelpharma AB: *See*—
Andersson, Matts; and Gustavsson, Varne, 5,192,173, Cl. 409-84.000.
Andersson, Matts, 5,192,472, Cl. 264-40.100.
Nobumoto, Kazutoshi: *See*—
Tsuyama, Toshiaki; Nobumoto, Kazutoshi; Kageyama, Fumio; Sone, Akira; and Kawamura, Makoto, 5,193,061, Cl. 364-426.020.
Nobuo, Yamada; and Kiuchi, Keiji, to Mitsuba Electric Manufacturing Co., Ltd. Fuel feed pump. 5,192,184, Cl. 415-169.100.
Nobusawa, Hideaki, to NEC Corporation. Power saving DC-DC converter for radio pagers. 5,193,211, Cl. 455-38.200.
Noddin, Richard A.: *See*—
Lennox, Charles D.; Noddin, Richard A.; and Sahatjian, Ronald, 5,191,883, Cl. 128-401.000.
Noguchi, Masahiro: *See*—
Ibuka, Toshihiko; and Noguchi, Masahiro, 5,192,994, Cl. 257-766.000.
Noguchi, Masato, to Asahi Kogaku Kogyo Kabushiki Kaisha. Optical system for eliminating ghost image in wide wavelength band. 5,193,028, Cl. 359-581.000.
Noiles, Douglas G.: *See*—
Christie, Michael J.; DeCarlo, Alfred F., Jr.; McTighe, Timothy; and Noiles, Douglas G., 5,192,329, Cl. 623-22.000.
Nok Kluber Company Ltd.: *See*—
Nishimura, Jun, 5,192,457, Cl. 252-25.000.
Nolan, Joseph C.: *See*—
Lo, Young S.; Nolan, Joseph C.; and Shamblee, Dwight A., 5,192,785, Cl. 514-399.000.
Nomura, Noriyuki: *See*—
Ide, Fumito; and Nomura, Noriyuki, 5,192,975, Cl. 355-235.000.
Norbury, David S., to Rolls-Royce plc. Brush seal arrangement. 5,192,084, Cl. 277-53.000.

Norco, Inc.: *See*—
Barnes, Michael; and Koskelowsky, Joseph, 5,192,098, Cl. 292-207.000.
Parsons, John D., 5,191,805, Cl. 74-459.000.
Noro, Masaki: *See*—
Hanada, Ryoji; Noro, Masaki; Minami, Yukimasa; and Takasugi, Motohide, 5,192,380, Cl. 152-454.000.
Norsk Hydro a.s.: *See*—
Juel, Anders; Strand, Olaf; Omdal, Bjarne; and Lysfjord, Roger, 5,192,133, Cl. 383-7.000.
North Carolina Central Univ.: *See*—
Izydore, Robert A.; and Hall, Iris H., 5,192,761, Cl. 514-241.000.
Northern Engineering Industries PLC: *See*—
Jackson, Leonard, 5,191,991, Cl. 220-207.000.
Jackson, Leonard, 5,193,049, Cl. 361-379.000.
Northern Telecom Limited: *See*—
Britman, Sergiu A., 5,193,068, Cl. 364-578.000.
McNicol, John D.; and Harman, Stephen G., 5,193,224, Cl. 455-126.000.
Northwestern University: *See*—
Bouck, Noel P.; Polverini, Peter J.; Good, Deborah J.; and Rastinejad, Farzan, 5,192,744, Cl. 514-8.000.
Ward, William F.; Molteni, Agostino; Ts'ao, Chung-hsin; and Hinz, Joann M., 5,192,524, Cl. 424-1.100.
Norwood, Peter C.: *See*—
Cutts, Richard W., Jr.; Norwood, Peter C.; DeBacker, Kenneth C.; Mehta, Nikhil A.; Jewett, Douglas E.; Allison, John D.; and Horst, Robert W., 5,193,175, Cl. 395-575.000.
Norwood, Richard G.: *See*—
Bordui, Peter F.; Norwood, Richard G.; and Blachman, Ronald, 5,193,097, Cl. 372-21.000.
Nosatzki, Michal: *See*—
Lichtash, Avi; Vitelson, Israel; Huna, Zvi; Markus, Reuven; Nosatzki, Michal; Gutman, Baruch; Orbach, Shlomo; Taler, Rafi; Moshe, Yossi; Bruckman, Leon; and Agmon, Gideon, 5,193,087, Cl. 370-58.200.
Nose, Kazuo: *See*—
Konishi, Masami; Narazaki, Hiroshi; Iwatani, Toshiharu; Nose, Kazuo; Sato, Takashi; Oshima, Hiroo; Kitagawa, Soichi; and Tubono, Hazime, 5,193,066, Cl. 364-472.000.
Noshiro, Atsumi: *See*—
Inoue, Eiichi; Noshiro, Atsumi; and Utsumi, Minoru, 5,192,631, Cl. 430-56.000.
Novak, John. Auxiliary pressure clamp. 5,192,060, Cl. 269-147.000.
Noyes, Gary R.: *See*—
Carlson, James J.; and Noyes, Gary R., 5,193,025, Cl. 359-356.000.
Nozaki, Katsuhiko; and Abe, Tetsuya, to Asahi Kogaku Kogyo K.K. Zoom finder system. 5,193,030, Cl. 359-687.000.
Nozawa, Masafumi: *See*—
Kitajima, Hiroyuki; Yamamoto, Akira; Doi, Takashi; and Nozawa, Masafumi, 5,193,154, Cl. 395-250.000.
Nsertaseal Corporation: *See*—
Webb, James E., 5,192,156, Cl. 404-4.000.
NSK Ltd.: *See*—
Imade, Noritoshi; and Ono, Katsuyasu, 5,192,839, Cl. 200-61.45R.
Nukada, Hideki, to Kabushiki Kaisha Toshiba. Apparatus and method of printing data in a book, a notebook, or the like. 5,192,140, Cl. 400-26.000.
Numata, Satoshi: *See*—
Kodaka, Kenji; Kinoshita, Katsutoshi; Nakaya, Michihiko; Ebihara, Koichi; Shiraishi, Shirou; Yamada, Eiichi; and Numata, Satoshi, 5,192,778, Cl. 514-341.000.
Oak Industries, Inc.: *See*—
Cotic, Dennis J.; and Hosking, Jack K., 5,191,840, Cl. 104-17.100.
Oakes, Kenneth: *See*—
Sparrow, Jesse R.; and Estep, John A., 5,192,558, Cl. 425-87.000.
Obitz, Daniel: *See*—
George, Pascal; Menin, Jacques; Merly, Jean-Pierre; Bigg, Dennis; Obitz, Daniel; Peynot, Michel; and Veronique, Corinne, 5,192,763, Cl. 514-252.000.
Ocampo, Salvador C. Safety detector for railroad switch points with visual indicator mechanism. 5,192,038, Cl. 246-220.000.
O'Connell, Robert M.: *See*—
Moir, David; and O'Connell, Robert M., 5,192,386, Cl. 156-268.000.
Oda, Masao; and Iwasa, Tatsuya, to Mitsubishi Denki Kabushiki Kaisha. Method and apparatus for forming thin film. 5,192,370, Cl. 118-723.000.
Odahara, Koichi: *See*—
Sudo, Kiyoshi; Sakurai, Yasutomo; Odahara, Koichi; Hoshi, Kenji; and Kanaya, Hideharu, 5,192,914, Cl. 328-72.000.
Office Galileo S.p.A.: *See*—
Lapucci, Antonio, 5,192,982, Cl. 356-345.000.
Ogasawara, Masaki: *See*—
Nishioka, Asaaki; Sakai, Etsuo; Kaneko, Tomohiro; and Ogasawara, Masaki, 5,192,366, Cl. 106-724.000.
Ogawa, Ryota: *See*—
Yoshida, Kazushi; Ogawa, Ryota; and Abe, Tetsuya, 5,192,961, Cl. 353-66.000.
Ogawa, Takao: *See*—
Kuramoto, Koshi; Nakagawa, Tsuguhiko; Shibuya, Satoshi; Ogawa, Takao; Kaihara, Toshikazu; and Furukawa, Kusuo, 5,192,485, Cl. 266-80.000.
Ogawara, Hiroo: *See*—
Nakazato, Yasuaki; and Ogawara, Hiroo, 5,191,738, Cl. 51-283.00R.
Ogita, Kazuyuki: *See*—
Yamada, Yoshikado; Yamasaki, Kimihito; Yoshiura, Syoichiro; Ogita, Kazuyuki; and Iwasa, Osamu, 5,192,942, Cl. 340-706.000.
Oglesby, Oliver D.: *See*—
Crook, Alan; Oglesby, Oliver D.; and Oldroyd, Brian, 5,191,712, Cl. 30-34.200.
Ognedal, Einar: *See*—
Nja, Olav; and Ognedal, Einar, 5,191,941, Cl. 172-224.000.
Oguri, Yasuo: *See*—
Kijima, Naoto; and Oguri, Yasuo, 5,192,325, Cl. 623-16.000.
Ohanamori, Hideyuki: *See*—
Yamaguchi, Mikimasa; Nakagawa, Michio; Ohanamori, Hideyuki; Yoshida, Masayuki; Arai, Toshitaka; and Matsushita, Hiroshi, 5,192,413, Cl. 204-300.00R.
Ohara, Yoshinobu: *See*—
Kishi, Teruo; Shiwa, Mitsuharu; Ohara, Yoshinobu; and Nakagami, Yasuhiro, 5,191,796, Cl. 73-632.000.
Ohfusa, Yoshitaka: *See*—
Arai, Toshiaki; Ohfusa, Yoshitaka; Nagasuka, Hirohumi; and Yoshizawa, Yasufumi, 5,193,172, Cl. 395-425.000.
Ohkawa, Nobuyuki: *See*—
Nakamura, Norio; Ohkawa, Nobuyuki; Oshima, Takeshi; Miyamoto, Masaaki; and Iijima, Yasuteru, 5,192,766, Cl. 514-255.000.
Ohmori, Kazuo; Seto, Tsuneo; Itakura, Hitoshi; Kohno, Mikio; Nagao, Masaru; Morishita, Tatsuya; and Tanigawa, Masayuki, to Kawasaki Steel Corporation. Roller-type straightening apparatus for H-beams. 5,191,780, Cl. 72-164.000.
Ohmori, Kenji: *See*—
Suzuki, Fumio; Nakasato, Yoshisuke; Ohmori, Kenji; Tamura, Tadafumi; Hosoe, Hisashi; Kubo, Kazuhiro; and Yoshitake, Ikufumi, 5,192,768, Cl. 514-293.000.
Suzuki, Fumio; Kawakita, Takashi; Kuroda, Takeshi; Ohmori, Kenji; Nakajima, Hiroshi; Kamiya, Toshikazu; and Tamaoki, Tatsuya, 5,192,769, Cl. 514-293.000.
Ohmura, Satomi; and Kashizaki, Yoshio, to Canon Kabushiki Kaisha. Electrophotographic bisazo photosensitive member, and electrophotographic apparatus and facsimile employing the same. 5,192,632, Cl. 430-58.000.
Ohneth, Edwin J.: *See*—
Mercuri, Robert A.; Ohneth, Edwin J.; and Lewis, Richard T., 5,192,605, Cl. 428-224.000.
Ohno, Yoshimi: *See*—
Shinohara, Junichi; and Ohno, Yoshimi, 5,192,860, Cl. 250-201.800.
Shinohara, Junichi; Ohno, Yoshimi; Serikawa, Yoshio; and Nishida, Tohru, 5,192,964, Cl. 354-202.000.
O'Hoy, Kim L.: *See*—
Harrison, Gavin B. L.; Dempster, Robert P.; Rickard, Michael D.; Lightowlers, Marshall W.; Heath, David D.; Lawrence, Stephen B.; and O'Hoy, Kim L., 5,192,538, Cl. 424-88.000.
Ohsaki, Minoru: *See*—
Shuto, Mitsutoshi; Fukazawa, Yasushi; and Ohsaki, Minoru, 5,192,371, Cl. 118-728.000.
Ohshima, Yutaka: *See*—
Iida, Yoshihiro; Kira, Jin; Ohshima, Yutaka; Takara, Toshiyuki; and Yamaya, Koji, 5,191,878, Cl. 128-4.000.
Ohta, Humio; and Matsumzawa, Tadahiko, to Kabushiki Kaisha Asahi Corporation. Vibration damper obtained by adjusting the resin and aromatic components of the asphalt base. 5,192,420, Cl. 208-23.000.
Ohta, Kenji; and Van, Kazuo, to Sharp Kabushiki Kaisha. Optical memory device. 5,192,644, Cl. 430-338.000.
Ohta, Kenji: *See*—
Miyake, Tomoyuki; Nakayama, Junichiro; Katayama, Hiroyuki; Takahashi, Akira; and Ohta, Kenji, 5,193,082, Cl. 369-112.000.
Ohtaka, Hideki: *See*—
Juri, Tatsuro; Matsumi, Chiyoko; Kadono, Shinya; and Ohtaka, Hideki, 5,193,010, Cl. 358-336.000.
Ohtaki, Keizaburo: *See*—
Sasamoto, Hiroshi; and Ohtaki, Keizaburo, 5,191,707, Cl. 29-783.000.
Ohtsubo, Yutaka: *See*—
Tsutsumi, Yasuhiro; and Ohtsubo, Yutaka, 5,193,144, Cl. 395-76.000.
Ohwaki, Makoto: *See*—
Yasui, Hisako; Hayakawa, Kazuhito; Ohwaki, Makoto; and Kan, Tatsuhiko, 5,192,685, Cl. 435-252.100.
Ohzeki, Katsuhisa: *See*—
Hirano, Katsumi; Fujita, Munehisa; and Ohzeki, Katsuhisa, 5,192,649, Cl. 430-497.000.
Oishi, Kanji: *See*—
Hatano, Susumu; Oishi, Kanji; Kikuchi, Takashi; Saigou, Yasuhiko; Fukuta, Hiroshi; Uchiyama, Kunio; Aoki, Hirokazu; and Nishii, Osamu, 5,193,075, Cl. 365-233.000.
Ojima, Juji; and Hino, Isao, to NHK Spring Co., Ltd. Hose band. 5,191,683, Cl. 24-20.00R.
Ojima, Nobutoshi: *See*—
Yoshikuni, Yoshiaki; Ojima, Nobutoshi; and Mori, Kazuya, 5,192,772, Cl. 514-315.000.
Okada, Hisashi: *See*—
Kojima, Tetsuro; Ishiguro, Shoji; Okada, Hisashi; and Yagihara, Morio, 5,192,647, Cl. 430-448.000.
Okada, Koichi; and Omura, Ikuo, to Kuraray Co., Ltd. Dental restorative material. 5,192,815, Cl. 523-115.000.

Okada, Yasuhiro: *See—*
Mizumoto, Masao; Ougino, Kouichirou; Shimazaki, Tsutomu; Inoue, Tomohiro; and Okada, Yasuhiro, 5,192,902, Cl. 318-561.000.

Okamoto, Ichiro: *See—*
Shibata, Tohru; Namikoshi, Hajime; and Okamoto, Ichiro, 5,192,444, Cl. 210-635.000.

Okamura, Masami: *See—*
Sawa, Takao; Okamura, Masami; and Takahashi, Yumiko, 5,192,375, Cl. 148-306.000.

Okano, Haruo: *See—*
Suguro, Kyoichi; and Okano, Haruo, 5,192,714, Cl. 437-195.000.

Okanuma, Hideyuki: *See—*
Saginao, Kazuteru; and Okanuma, Hideyuki, 5,193,221, Cl. 455-92.000.

Okazaki, Katsuyoshi, to Fujitsu Limited. Data transfer process with loop checking. 5,193,093, Cl. 371-34.000.

Oki Electric Industry Co., Ltd.: *See—*
Harada, Yusuke, 5,192,713, Cl. 437-192.000.
Itoh, Masahiro, 5,192,705, Cl. 437-57.000.
Miyamoto, Sanpei; and Uehara, Hidetoshi, 5,192,878, Cl. 307-362.000.

Okino, Susumu: *See—*
Ukawa, Naohiko; Okino, Susumu; Takashina, Toru; Onizuka, Masakazu; and Inoue, Kenji, 5,192,518, Cl. 423-244.080.

Okonogi, Hirotaka: *See—*
Kawakami, Shin; Haruyama, Satoshi; and Okonogi, Hirotaka, 5,191,709, Cl. 29-852.000.

Okubo, Kazuyuki: *See—*
Hirata, Hisakazu; Okubo, Kazuyuki; and Kitamura, Motomi, 5,192,557, Cl. 425-589.000.

Okumura, Kazuo: *See—*
Shiokawa, Youichi; Okumura, Kazuo; Take, Kazuhiko; and Tsubaki, Kazunori, 5,192,779, Cl. 514-346.000.

Okumura, Naoji: *See—*
Sakashita, Hirohiko; Kutsuki, Tetsuo; and Okumura, Naoji, 5,192,996, Cl. 358-21.00R.

Okuyama, Hitoshi: *See—*
Yajima, Kiyoshi; Suzuki, Takao; Itoh, Masanori; Okuyama, Hitoshi; Uruga, Ken-ichi; and Hirabayashi, Hisanaga, 5,192,940, Cl. 338-308.000.

Oldroyd, Brian: *See—*
Crook, Alan; Oglesby, Oliver D.; and Oldroyd, Brian, 5,191,712, Cl. 30-34.200.

O'Leary, James: *See—*
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Pham, Xuan M.: *See*—
Amendola, Angel; and Pham, Xuan M., 5,192,262, Cl. 493-365.000.

Phan, Cu N.; and Stoller, Marshall L., to University of California, Regents of the. Method and device for retrieving materials from body lumens. 5,192,286, Cl. 606-127.000.

Phelps, Andrew E.: *See*—
Strout, Robert E., II; Spix, George A.; Miller, Edward C.; Schooler, Anthony R.; Silbey, Alexander A.; Phelps, Andrew E.; Vanderwarn, Brian D.; and Gaertner, Gregory G., 5,193,187, Cl. 395-650.000.

Philip Morris Incorporated: *See*—
Amendola, Angel; and Pham, Xuan M., 5,192,262, Cl. 493-365.000.
Arents, Robert A.; and Patterson, Everett C., 5,191,904, Cl. 131-96.000.
Myracle, James L., Jr., 5,191,906, Cl. 131-365.000.

Phillips Petroleum Company: *See*—
Fu, Chia-Min; and Maholland, Michael K., 5,192,724, Cl. 502-28.000.

Physio-Control Corporation: *See*—
Paeth, David S.; Gross, Stephen W.; and Lyster, Thomas D., 5,191,886, Cl. 128-640.000.

Picard, Donald F.: *See*—
Jones, Scott A.; Arumainayagam, Allen T.; Mukherjee, Amitava; Picard, Donald F.; and Cohen, Richard E., 5,193,110, Cl. 379-94.000.

Piccirillo, John; and Meidl, John A., to Zimpro Passavant Environmental Systems, Inc. Multiple zone batch treatment process. 5,192,442, Cl. 210-605.000.

Pierson, James S.: *See*—
Frazier, Allen L.; and Pierson, James S., 5,193,008, Cl. 358-298.000.

Pies, Gerrit: *See*—
Rixen, Wolfgang; and Pies, Gerrit, 5,192,145, Cl. 403-255.000.

Pike, James F., to United States of America, National Aeronautics and Space Administration. Substantially oxygen-free contact tube. 5,192,852, Cl. 219-137.610.

Pill, Johannes; Aufenanger, Johannes; Konrad, Thomas; and Junemann, Klaus-Peter, to Boehringer Mannheim GmbH. Method of preventing penile tissue degenerative change. 5,192,806, Cl. 514-562.000.

Pillarhouse International Limited: *See*—
Ciniglio, Alexander J.; and Squire, Neil C., 5,192,014, Cl. 228-34.000.

PIM Corporation: *See*—
Torielli, Robert J., 5,192,165, Cl. 405-156.000.

Pinchis, Peter: *See*—
Nayyar, Baldev K.; Kellner, Gabor; Pinchis, Peter; Martinek, Joseph; Ayuso, Anthony; and Weiss, Julius, 5,191,722, Cl. 34-12.000.

Pingleton, Edward D.: *See*—
Hasson, Harrith M.; Pingleton, Edward D.; and Thomson, Paul G., 5,192,299, Cl. 606-206.000.

Pioneer Electronic Corporation: *See*—
Nishida, Masami; Izawa, Masataka; and Tsuchiya, Kunimoto, 5,192,962, Cl. 353-98.000.
Yanagawa, Naoharu, 5,193,083, Cl. 369-116.000.
Yasushi, Mitsuo, 5,191,894, Cl. 128-733.000.

Pipes, David W., to Mallinckrodt Medical, Inc. Kit for preparation of rhenium therapeutic agents for bone cancer without purification. 5,192,526, Cl. 424-1.100.

Pipes, George R., to Eaton-Kenway, Inc. Apparatus for moving rolls from a loading station to an unwinding station and for moving empty roll cores from the unwinding station to the loading station. 5,192,033, Cl. 242-58.600.

Pirelli Cavi S.p.A.: *See*—
Pizzorno, Massimo; and Ginocchio, Alessandro, 5,193,134, Cl. 385-105.000.

Pitman-Moore New Zealand Limited: *See*—
Harrison, Gavin B. L.; Dempster, Robert P.; Rickard, Michael D.; Lightowlers, Marshall W.; Heath, David D.; Lawrence, Stephen B.; and O'Hoy, Kim L., 5,192,538, Cl. 424-88.000.

Pitney Bowes Inc.: *See*—
Martin, Samuel W., 5,192,389, Cl. 156-364.000.
Marzullo, Joseph H.; Graveson, Sandra J.; Ballard, Michael D.; and Mrozinski, Curtis L., 5,191,751, Cl. 53-569.000.

Pittway Corporation: *See*—
Conforti, Fred J., 5,191,855, Cl. 116-280.000.

Pizzorno, Massimo; and Ginocchio, Alessandro, to Pirelli Cavi S.p.A. Grooved-core cable for use with ribbon optical fibres and process to make the same. 5,193,134, Cl. 385-105.000.

Platzer, Stephan J. W., to Hoechst Celanese Corporation. Image transfer to diverse paper stocks. 5,192,630, Cl. 430-11.000.

Pleatman, Mark A. Surgical collector and extractor. 5,192,284, Cl. 606-114.000.

Plourde, Thomas R.: *See*—
Ruggiero, Ralph; Plourde, Thomas R.; and Kaczynski, Joseph, Jr., 5,191,694, Cl. 29-430.000.

Podhaisky, Todd D.: *See*—
Silvestri, James T.; Podhaisky, Todd D.; Klein, Timothy E.; Baker, Mark W.; and Czarnek, David J., 5,192,152, Cl. 400-679.000.

Polaroid Corporation: *See*—
Boggs, Roger A.; Borror, Alan L.; Conlon, Patrick R.; Cournoyer, Richard L.; Ellis, Ernest W.; and Waller, David P., 5,192,645, Cl. 430-338.000.

Polett, Walter J. Re-usable flexible bulk containers. 5,192,134, Cl. 383-24.000.

Polhede, Wilhelm: *See*—
Hack, Robert; and Polhede, Wilhelm, 5,193,100, Cl. 373-112.000.

Poli, Robert G.; and Johnson, Noel L., to Abbott Laboratories. Multi-valve manifold for drug infusion systems. 5,192,269, Cl. 604-82.000.

Polverini, Peter J.: *See*—
Bouck, Noel P.; Polverini, Peter J.; Good, Deborah J.; and Rastinejad, Farzan, 5,192,744, Cl. 514-8.000.

Polylithics, Inc.: *See*—
Jacobs, Scott L., 5,192,716, Cl. 437-209.000.

Pomini Farrel S.p.A.: *See*—
Mantovan, Gianfranco; and Fay, Gianfranco, 5,191,818, Cl. 83-27.000.

Pontrelli, Gene J.; and Zafiroglu, Dimitri P., to Du Pont de Nemours, E. I., and Company. Stitchbonded comfort fabric. 5,192,600, Cl. 428-102.000.

Poppe, Hildegard: *See*—
Wunderlich, Helmut; Stark, Andreas; Lohmann, Dieter; Zenkar, Lothar; Bartsch, Reni; Poppe, Hildegard; Skoldinov, Aleksandr P.; Kaverina, Natalja V.; Grizenko, Anna N.; Lyskovzev, Valentin V.; and Grigoreva, Ekaterina K., 5,192,760, Cl. 514-217.000.

Porchia, Jose: *See*—
Woods, Jamie M.; Porchia, Jose; and Dais, Brian C., 5,192,135, Cl. 383-63.000.

Possell, Clarence R. Substantially noiseless fan. 5,192,182, Cl. 415-90.000.

Powercard Supply C.A.: *See*—
Brandin, Christopher L., 5,193,176, Cl. 395-575.000.

PPG Industries, Inc.: *See*—
DuBois, Donald W.; and Dilmore, Colonel R., 5,192,401, Cl. 204-98.000.

Precision General, Inc.: *See*—
Allen, Paul V.; Nimberger, Spencer M.; and Ward, Robert L., 5,191,801, Cl. 73-864.340.

Preis, Peter N.: *See*—
Flood, Mark A.; Kalan, Michael D.; Preis, Peter N.; and Peterson, Alden L., II, 5,193,189, Cl. 395-650.000.

Prencipe, Michael: *See*—
Gaffar, Abdul; Nabi, Nuran; Afflitto, John; Stringer, Orum; and Prencipe, Michael, 5,192,531, Cl. 424-52.000.

Press, Jeffery B.; and Sanfilippo, Pauline, to Ortho Pharmaceutical Corporation. Substituted biphenylalkoxyamines. 5,192,786, Cl. 514-399.000.

Preston, Keith R., to British Telecommunications plc. Optical filter tuning apparatus and an optical filtering method. 5,193,027, Cl. 359-566.000.

Price, Gerald; Zannis-Hadjopoulos, Maria; and Frappier, Lori, to Royal Institution for the Advancement of Learning (McGill University), The. Monoclonal antibodies to cruciform DNA structure. 5,192,683, Cl. 435-240.270.

Prime Actuator Control Systems Limited: *See*—
Calvert, Michael A., 5,191,808, Cl. 74-526.000.

Prince, Martin R.: *See*—
Hayes, Gary B.; Kittrell, Carter; Prince, Martin R.; Tobin, Jill M.; and Feld, Michael S., 5,192,278, Cl. 606-15.000.

Prinz, Bruno; Romero, Alberto; and Muller, Ingrid, to Metallgesellschaft Aktiengesellschaft. Process of producing continuously cast monotectic aluminum-silicon alloy strip and wire. 5,192,377, Cl. 148-551.000.

Procter & Gamble Company, The: *See*—
Chapura, Francis B.; and Mitra, Sekhar, 5,192,752, Cl. 514-152.000.
El-Nokaly, Magda; and Hiler, George D., 5,192,572, Cl. 426-438.000.
Guay, Christopher B.; and Hinton, Joanna P., 5,192,532, Cl. 424-53.000.

Pronko, Peter P.: *See*—
Wu, Richard L.; and Pronko, Peter P., 5,192,523, Cl. 427-523.000.

Protek AG: *See*—
Koch, Rudolf; Freudiger, Stefan; and Fluckiger, Hans, 5,192,322, Cl. 623-13.000.

Protel, Inc.: *See*—
Hayes, Stephen J., 5,191,957, Cl. 194-318.000.

Provost, Joseph G., to Sollac. Process for lining a distributor for continuous casting of metals with a refractory material corresponding distributor and refractory lining. 5,192,721, Cl. 501-113.000.

Proxmire, Deborah L.; Jackson, Wanda W.; Kollin, Nancy D.; Mace, Tamara L.; McCormack, Ann L.; and Schlinz, Daniel R., to Kimberly-Clark Corporation. Absorbent article having a liner which exhibits improved softness and dryness, and provides for rapid uptake of liquid. 5,192,606, Cl. 428-284.000.

Pruksarnukul, Josefina L.: *See*—
Gillberg-Laforce, Gunilla E.; and Pruksarnukul, Josefina L., 5,192,621, Cl. 428-480.000.

Pruszenski, Anthony S., Jr.: *See*—
Breed, David S.; and Pruszenski, Anthony S., Jr., 5,192,838, Cl. 200-61.45R.

Prutech Research and Development Partnership II: *See*—
Lennox, Charles D.; Noddin, Richard A.; and Sahatjian, Ronald, 5,191,883, Cl. 128-401.000.

Puckett, Lawrence J., to United States of America, Army. Sabot for high dispersion shot shell. 5,192,830, Cl. 102-457.000.

Purcell, Robert J.: *See*—
Bargfrede, Brent C.; Carter, Carl W.; Neal, James G.; and Purcell, Robert J., 5,191,951, Cl. 180-9.100.

Pure Software Inc.: *See*—
Hastings, Reed, 5,193,180, Cl. 395-575.000.

Purvis, Edward; and Spector, George. Reflective safety stripes. 5,193,026, Cl. 359-516.000.

Pye, Barry J., to British Technology Group Ltd. Apparatus for spraying harvested crops. 5,192,369, Cl. 118-624.000.

Pye, Lenwood D.: *See*—
Mathur, Akshay; and Pye, Lenwood D., 5,192,351, Cl. 65-18.100.

Qin, Kong. Variable chopped input dimmable electronic ballast. 5,192,896, Cl. 315-224.000.

Quadrum Telecommunications, Inc.: *See*—
McGough, Gerald B., 5,193,113, Cl. 379-437.000.

Qualcomm Incorporated: *See*—
Viterbi, Andrew J., 5,193,094, Cl. 371-43.000.

Quality Tubing, Inc.: *See*—
Dubois, Jon D., 5,191,911, Cl. 138-100.000.

Quang, Dang V.; Ham, Pierre; Gelas, Daniel; and Legrand, Christian, to Institut Francais du Petrole. Apparatus for performing chemical reactions under pressure in a multi-stage reaction zone with external intermediary thermal conditioning. 5,192,512, Cl. 422-190.000.

Quarton, Inc.: *See*—
Chou, Chia-Li, 5,193,099, Cl. 372-107.000.

Quinn, Karen D.; and Miller, Theodore E., Jr., to Dow Chemical Company, The. Method for sensing individual ion concentrations within mixtures using sample front ion exchange elution and indirect photometric detection. 5,192,691, Cl. 436-161.000.

Quinton Instrument Company: *See*—
Fowler, Bradford C., 5,192,300, Cl. 606-213.000.

Qureshi, Shahid U. H.: *See*—
Chamberlin, George P.; and Qureshi, Shahid U. H., 5,193,204, Cl. 395-800.000.

Rabe, Duane C.: *See*—
Agahi-Kesheh, Darioush; and Rabe, Duane C., 5,192,924, Cl. 333-175.000.

Racal-Datacom, Inc.: *See*—
Smith, Daniel L., 5,193,152, Cl. 395-200.000.

Raddatz, Siegfried: *See*—
Mohrs, Klaus; Raddatz, Siegfried; Fruchtmann, Romanis; Kohlsdorfer, Christian; Muller-Peddinghaus, Reiner; and Theisen-Popp, Pia, 5,192,771, Cl. 514-311.000.

Rademacher, Wilhelm: *See*—
Rentzea, Costin; and Rademacher, Wilhelm, 5,192,358, Cl. 504-307.000.

Radhakrishnan, Ramachandran; Mihalko, Paul J.; and Abra, Robert M., to Liposome Technology, Inc. Corticosteroid inhalation treatment method. 5,192,528, Cl. 424-45.000.

Radoux, Henri: *See*—
Metz, Jean; Mailliet, Pierre; and Radoux, Henri, 5,192,489, Cl. 266-271.000.

Raizon, Bernard; Evanno, Yannick; and LeGalloudec, Odette, to Synthelabo. Derivatives of 2-aminoalkyl-5-arylalkyl-1,3-dioxanes, their preparation and their therapeutic application. 5,192,797, Cl. 514-452.000.

Ralin, Inc.: *See*—
Righter, William H., 5,191,891, Cl. 128-710.000.

Ram, Michael J.: *See*—
Kalb, Irvin M.; Shaw, Robert H.; and Ram, Michael J., 5,192,271, Cl. 604-116.000.

Ramakrishnan, E. S.; Cornett, Kenneth D.; and Howng, Wei-Yean, to Motorola, Inc. Voltage variable capacitor having amorphous dielectric film. 5,192,871, Cl. 257-595.000.

Ramde, Amolak: *See*—
Aronowitz, Sheldon; and Ramde, Amolak, 5,192,712, Cl. 437-143.000.

Ramm, Jurgen; Daxinger, Helmut; Buhl, Rainer; and Bergmann, Erich, to Balzers AG. Method of producing coating using negative DC pulses with specified duty factor. 5,192,578, Cl. 427-576.000.

Ramsay, Michael V. J.; Tiley, Edward P.; and Sutherland, Derek R., to American Cyanamid Company. Macrolide compounds. 5,192,777, Cl. 514-333.000.

Rand, Roy E.; and Tsiang, Eugene Y., to Imatron, Inc. Ion controlling electrode assembly for a scanning electron beam computed tomography scanner. 5,193,105, Cl. 378-137.000.

Rankel, Lillian A.: *See*—
Audeh, Costandi A.; and Rankel, Lillian A., 5,192,421, Cl. 208-309.000.

Rapistan Corp.: *See*—
Woltjer, Bernard H.; and Terpstra, Arthur J., Jr., 5,191,967, Cl. 198-781.000.

Rassman, William R. Apparatus for manipulating back muscles. 5,192,304, Cl. 606-238.000.

Rastinejad, Farzan: *See*—
Bouck, Noel P.; Polverini, Peter J.; Good, Deborah J.; and Rastinejad, Farzan, 5,192,744, Cl. 514-8.000.

Rathbun, Alan E., Jr., to Luxaire Cushion Co. Method and apparatus for forming a contoured surface. 5,191,824, Cl. 83-874.000.

Rauchfuss, Brian D.: *See*—
Alcorn, Byron A.; Cherry, Robert W.; Coleman, Mark D.; and Rauchfuss, Brian D., 5,193,148, Cl. 395-157.000.

Rauh, Hans-Juergen: *See*—
Findeis, Gunter; Nitsch, Wilhelm; Rauh, Hans-Juergen; Zahn, Wolfgang; Treiber, Helmut; and Schindler, Hans-Georg, 5,192,970, Cl. 355-41.000.

Raychem Corporation: *See*—
Sherman, Edward S., 5,192,590, Cl. 427-304.000.
Raynet Corporation: *See*—
Uken, William D.; and Link, William T., 5,193,132, Cl. 385-32.000.
Raytheon Company: *See*—
Wilson, David T.; and Tancrell, Roger H., 5,192,470, Cl. 264-22.000.
Recta AG: *See*—
Gloor, Hans, 5,191,792, Cl. 73-178.00R.
Reed-Gitomer, Berenice Y., to United States of America, Health and Human Services. ELISA methods for the determination of human platelet derived growth factor (PDGF) dimer forms present in human tissues and fluids. 5,192,660, Cl. 435-7.210.
Reedy, James D.: *See*—
Farris, David D.; Reedy, James D.; and Cobb, Raymond L., 5,192,812, Cl. 521-112.000.
Reese, Robert J.; and Newkirk, Franklin D., to Unidynamics Corporation. Ingredient mixing bowl and evacuation system. 5,192,002, Cl. 222-108.000.
Refer, Marcel: *See*—
Wanger, Freddy; Refer, Marcel; and Schneckenburger, Rainer, 5,191,993, Cl. 220-333.000.
Rehal, Lavinder S.: *See*—
Walker, John C.; and Rehal, Lavinder S., 5,192,929, Cl. 340-444.000.
Reifsnider, Kenneth: *See*—
Chang, Fu-Kuo; Reifsnider, Kenneth; Davidson, James A.; and Georgette, Frederick S., 5,192,330, Cl. 623-22.000.
Reil, Wilhelm; Deutschbein, Ulrich; Knobloch, Gerd; and Liebram, Udo, to Tetra Pak Holdings S.A. Pack with peripheral seam for flowable contents. 5,191,988, Cl. 220-4.240.
Reinartz, Hans-Dieter; Volz, Peter; Beck, Erhard; and Goossens, Andre F. L., to Alfred Teves GmbH. Brake pressure control system with an electrical motor operating a pump and control valve. 5,192,120, Cl. 303-113.200.
Reiswig, Daniel: *See*—
Knauber, Steven K.; and Reiswig, Daniel, 5,192,216, Cl. 439-108.000.
Reiten, Denise M., to CNS, Inc. Volume variation sensor and method for obstructive sleep apnea monitoring. 5,191,893, Cl. 128-721.000.
Remeyer, Steven C.; and Meoli, Rudy B., Jr., to E-Z Sales and Manufacturing, Inc. Remote control fluorescent lantern. 5,192,126, Cl. 362-184.000.
Renard, Henri J. A., to ECIA. Flexible plain bearing and its application to motor vehicle steering mechanisms. 5,192,137, Cl. 384-275.000.
Rencher, William F., to McNeil-PPC, Inc. Bioadhesive pharmaceutical carrier. 5,192,802, Cl. 514-535.000.
Rentzea, Costin; and Rademacher, Wilhelm, to BASF Aktiengesellschaft. Oxalic acid derivatives, their preparation and plant growth regulators containing them. 5,192,358, Cl. 504-307.000.
Repetto: *See*—
Vallee, Jean-Marie, 5,191,726, Cl. 36-88.000.
Research Foundation of State of N.Y.: *See*—
Cheng, Yung-Chi; Lin, Tai-Shun; and Bardos, Thomas J., 5,192,764, Cl. 514-252.000.
Research Foundation of State University of New York, The: *See*—
Subbarao, Muralidhara, 5,193,124, Cl. 382-41.000.
Restaurant Technology, Inc.: *See*—
Cahlander, Robert L.; Carroll, David W.; Hollingsworth, Alfred C.; Lawrence, Gregory A.; and Rudesill, Brian R., 5,191,918, Cl. 141-1.000.
Reynolds Metals Company: *See*—
Bourcier, Gilbert F.; Krzyston, John F.; Smith, Philip E.; and Venable, Larry C., 5,192,359, Cl. 75-10.670.
Rezanka, Ivan: *See*—
Drake, Donald J.; Rezanka, Ivan; and Warner, Fredrick A., 5,192,959, Cl. 346-140.00R.
Rfsu Rehab AB: *See*—
Francke, Kurt, 5,191,660, Cl. 4-239.000.
Rheaume, Leo: *See*—
Creighton, John E.; and Rheaume, Leo, 5,192,734, Cl. 502-314.000.
Rheinmetall GmbH: *See*—
Harlizius, Ralf, 5,192,368, Cl. 118-72.000.
Rhone-Poulenc Chimie: *See*—
Delloye, Thierry; and Sabot, Jean-Louis, 5,192,443, Cl. 210-634.000.
Ricerca Elettromeccanica S.r.l.: *See*—
Bianco, Carlo, 5,192,001, Cl. 222-63.000.
Richards, Ian C.: *See*—
Cliff, Geoffrey R.; and Richards, Ian C., 5,192,357, Cl. 504-315.000.
Richardson, Donald A.; and Schatzer, James E., to Paccar Inc. Protective equipment compartment for trucks. 5,192,108, Cl. 296-37.100.
Richardson, Gregory A., to Neway Corp. Lock mechanism for an axle lift suspension. 5,192,101, Cl. 280-704.000.
Richey, Steven M.; MacDonald, Richard E.; and Mathis, Jimmy F. Off-peak thermal storage system providing a plurality of selected temperature outlets. 5,193,138, Cl. 392-341.000.
Richoux, Isabelle: *See*—
Grollier, Jean F.; and Richoux, Isabelle, 5,192,534, Cl. 424-59.000.
Grollier, Jean-Francois; Rosenbaum, Georges; and Richoux, Isabelle, 5,192,544, Cl. 424-401.000.
Richter, Hans J.; Hibst, Hartmut; and Fischer, Gerd, to BASF Magnetics GmbH. Production of a magnetic recording medium. 5,192,583, Cl. 427-128.000.
Rickard, Michael D.: *See*—
Harrison, Gavin B. L.; Dempster, Robert P.; Rickard, Michael D.; Lightowlers, Marshall W.; Heath, David D.; Lawrence, Stephen B.; and O'Hoy, Kim L., 5,192,538, Cl. 424-88.000.
Ricoh Company, Ltd.: *See*—
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Shinohara, Junichi; Ohno, Yoshimi; Serikawa, Yoshio; and Nishida, Tohru, 5,192,964, Cl. 354-202.000.
Ridge, William A., to Cashco, Inc. Dual rated live loaded packing system for a valve stem. 5,192,049, Cl. 251-214.000.
Riediker, Martin: *See*—
Steiner, Eginhard; Beyeler, Harry; Riediker, Martin; Desobry, Vincent; Dietliker, Kurt; and Husler, Rinaldo, 5,192,642, Cl. 430-281.000.
Righter, William H., to Ralin, Inc. Portable ECG monitor/recorder. 5,191,891, Cl. 128-710.000.
Riker Laboratoires, Inc.: *See*—
Velasquez, David J.; Hodson, Peter D.; and Calhoun, Clyde D., 5,192,548, Cl. 424-443.000.
Rikihisa, Yasuko: *See*—
Dawson, Jacqueline E.; and Rikihisa, Yasuko, 5,192,679, Cl. 435-243.000.
Rimmele, Walter: *See*—
Schollkopf, Ernst; Rimmele, Walter; Stiwitz, Roland; and Vogel, Konrad, 5,192,388, Cl. 156-324.000.
Rimondi, Renato: *See*—
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Rindlisbacher, Martin: *See*—
Hepp, Phillip; Tschopp, Werner H.; Rindlisbacher, Martin; and Schett, Oskar, 5,192,910, Cl. 324-315.000.
Ringler, Daniel R.: *See*—
Grabbe, Dimitry G.; Korsunsky, Iosif; and Ringler, Daniel R., 5,192,215, Cl. 439-73.000.
Risdon Corporation: *See*—
Van Brocklin, Owen F.; and McGarvey, Glenn W., 5,192,006, Cl. 222-321.000.
Ritz, Mordechai: *See*—
Meidan, Reuven; Livneh, Noam; Silbershatz, Giora; and Ritz, Mordechai, 5,193,102, Cl. 375-1.000.
Riutta, Raine R. Roller skate starting and stopping aids. 5,192,099, Cl. 280-11.200.
Rix, David M.; and Yingling, Christine M., to Cummins Engine Company, Inc. Fuel injectors and methods for making fuel injectors. 5,192,026, Cl. 239-533.300.
Rixen, Wolfgang; and Pies, Gerrit. Cross coupling for bars. 5,192,145, Cl. 403-255.000.
Roach, William J., to Tri-Continent Scientific, Inc. Pipette tip and piston. 5,192,511, Cl. 422-100.000.
Roadmaster Corporation: *See*—
Craig, Marion N., 5,191,809, Cl. 74-572.000.
Robbins Company, The: *See*—
Hartman, Thomas M.; and Sugden, David B., 5,192,115, Cl. 299-31.000.
Turner, John; and Dahmen, Neil J., 5,192,116, Cl. 299-75.000.
Robert Bosch GmbH: *See*—
Denz, Helmut, 5,191,781, Cl. 73-1.00E.
Kraemer, Manfred; and Warga, Johann, 5,191,868, Cl. 123-449.000.
Liskow, Uwe, 5,191,871, Cl. 123-531.000.
Mardus, Claus; Duckeck, Ralf; and Bragas, Peter, 5,193,214, Cl. 455-54.200.
Robert, Michael E.: *See*—
Neff, James A.; Fagerlie, Richard A.; Janssen, Eric P.; and Robert, Michael E., 5,192,936, Cl. 335-281.000.
Roberts, Hardy G., to T-W Management Company. Sectional van trailer having detachable, interchangeable compartments capable of forming a continuous van body with accompanying system for forming shelf decks and partition walls within cargo holding sections. 5,192,176, Cl. 410-140.000.
Roberts, James T.: *See*—
Lenz, William R.; Patel, Arvind; Roberts, James T.; and Schafer, Jack J., 5,192,232, Cl. 439-660.000.
Roberts, Marc W., to Carroll, Larry W. Golf cart windshield. 5,192,109, Cl. 296-84.100.
Robertshaw Controls Company: *See*—
Kaigler, William J., 5,192,840, Cl. 200-83.00R.
Robertson, Stella M.: *See*—
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Robinson, Dennis C.: *See*—
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Robinson, John T.: *See*—
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Robinson, Joseph R.: *See*—
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Rockwell International Corporation: *See*—
Boston, William A.; Balow, Frank A.; and Skipor, Eugene, 5,191,672, Cl. 15-256.500.
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Kim, Byunghee, 5,193,021, Cl. 359-81.000.
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Kim, Sung Ki, 5,191,770, Cl. 62-263.000.
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Barnish, Ian T.; Danilewicz, John C.; James, Keith; Samuels, Gillian M. B.; Terrett, Nicholas K.; Williams, Michael T.; and Wythes, Martin J., 5,192,800, Cl. 514-510.000.
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Ingle, Lloyd D.; and Koontz, John D., 5,192,015, Cl. 228-111.000.
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Mizumoto, Masao; Ougino, Kouichirou; Shimazaki, Tsutomu; Inoue, Tomohiro; and Okada, Yasuhiro, 5,192,902, Cl. 318-561.000.
Otsuki, Masatoshi; Kawanishi, Yasuyoshi; Sawada, Kenji; Kaido, Yoshinori; Mizumura, Takayuki; and Maeba, Masayoshi, 5,192,944, Cl. 340-765.000.
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Sastre, Santos F. Process and apparatus for physiotherapy in scoliosis and deviations of the rachis in general. 5,192,305, Cl. 606-241.000.
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Sato, Jun, to Shimano, Inc. Two-bearing reel. 5,192,036, Cl. 242-268.000.
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Sato, Koji, to Hitachi Metals, Ltd. Superalloys with low thermal-expansion coefficient. 5,192,497, Cl. 420-581.000.
Sato, Kozo: *See*—
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Sato, Wakao: *See—*
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Satzler, Ronald L.; and Schmillen, Edward E., to Caterpillar Inc. Track-type vehicle having steerable wheels. 5,191,952, Cl. 180-9.520.
Saunders, Jeffrey O.: *See—*
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Savich, Peter P., to First Brands Corporation. Label dispenser for blow molding machines. 5,192,554, Cl. 425-504.000.
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Scaramucci, John P. Top-entry check valve with pin fasteners. 5,191,913, Cl. 137-454.200.
Scarfone, Frank A.: *See—*
Smith, Kevin W.; Slater, Charles R.; Murphy, Gregory J.; Bales, Thomas O.; Box, John W.; and Scarfone, Frank A., 5,192,298, Cl. 606-205.000.
Scavino, Mario: *See—*
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Slesinski, Raymond J.; and Schaefer, Christian E., 5,191,689, Cl. 29-243.517.
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Schaham, Moshe, to An Con Genetics, Inc. Auto focusing bar code reader. 5,192,856, Cl. 235-462.000.
Schatzer, James E.: *See—*
Richardson, Donald A.; and Schatzer, James E., 5,192,108, Cl. 296-37.100.
Schaublin, Thomas; and Berchtold, Heinrich, to Gressel AG. Clamp element, including a rapid feed device combined with a force amplifier. 5,192,061, Cl. 269-228.000.
Scheel, Hans-Joachim, to Alb. Klein GmbH & Co. KG. Process and apparatus for the treatment of dust or like material which is capable of trickle flow. 5,191,844, Cl. 110-346.000.
Scheel, Wolfgang: *See—*
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Scheid, Manfred, to Mopa S.r.l. Buffer storage unit. 5,191,965, Cl. 198-460.000.
Scheler, Siegfried; Buhr, Gerhard; and Bergmann, Klaus, to Hoechst Aktiengesellschaft. Process for preparing 7-hydroxy-1,2-naphthoquinone-2-diazide-4-sulfonic acid or salts thereof. 5,192,640, Cl. 430-169.000.
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Brown, Gordon T.; and Scherer, Richard H., 5,193,055, Cl. 364-406.000.
Schering Agrochemicals Limited: *See—*
Cliff, Geoffrey R.; and Richards, Ian C., 5,192,357, Cl. 504-315.000.
Schett, Oskar: *See—*
Hepp, Phillip; Tschopp, Werner H.; Rindlisbacher, Martin; and Schett, Oskar, 5,192,910, Cl. 324-315.000.
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Schofield, Kenneth; Gahan, Richard J.; Schierbeek, Kenneth L.; and Larson, Mark L., 5,193,029, Cl. 359-604.000.
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Schilling, Peter, to Westvaco Corporation. Submicron lignin-based binders for water-based black ink formulations. 5,192,361, Cl. 106-26.00R.
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Findeis, Gunter; Nitsch, Wilhelm; Rauh, Hans-Juergen; Zahn, Wolfgang; Treiber, Helmut; and Schindler, Hans-Georg, 5,192,970, Cl. 355-41.000.
Schindler, Ursula: *See—*
Zoller, Gerhard; and Schindler, Ursula, 5,192,795, Cl. 548-423.000.
Schlinz, Daniel R.: *See—*
Proxmire, Deborah L.; Jackson, Wanda W.; Kollin, Nancy D.; Mace, Tamara L.; McCormack, Ann L.; and Schlinz, Daniel R., 5,192,606, Cl. 428-284.000.
Schlumberger Technology Corporation: *See—*
Edwards, A. Glen; Huber, Klaus B.; Hromas, Joe C.; Miszewski, Antoni K. L.; and Hill, William M., 5,191,933, Cl. 166-297.000.
Edwards, A. Glen; Huber, Klaus B.; and Miszewski, Antoni K. L., 5,191,936, Cl. 166-297.000.
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Krause, Klaus D.; Schmeykal, Rudolf; and Stolzenberger, Florian, 5,192,222, Cl. 439-347.000.
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Dir, Gary A.; Schmidlin, Fred W.; Sotack, John D.; and Stephany, Joseph F., 5,193,011, Cl. 358-455.000.
Schmidt, Harald, to Husky Injection Molding Systems Ltd. Plastic molding apparatus for equalizing flow pressure and flow velocity of plastic melt. 5,192,556, Cl. 425-549.000.
Schmidt, Jonathan E., to Snap-Fax Corporation. Real-time conversion of still-video to half-tone for hard copy output (such as on a facsimile machine). 5,193,012, Cl. 358-456.000.
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Hull, Charles W.; Jacobs, Paul F.; Schmidt, Kris A.; Smalley, Dennis R.; and Vinson, Wayne A., 5,192,559, Cl. 425-89.000.
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Satzler, Ronald L.; and Schmillen, Edward E., 5,191,952, Cl. 180-9.520.
Schnaar, Ronald L., to Johns Hopkins University, The. Carbohydrate cellular adhesion apparatus. 5,192,508, Cl. 422-70.000.
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Wanger, Freddy; Refer, Marcel; and Schneckenburger, Rainer, 5,191,993, Cl. 220-333.000.
Schnegg, Julius R., to Burlington Industries, Inc. Weft inserted, warp knit, woven-look fabric and apparatus and methods of making the fabric. 5,191,777, Cl. 66-195.000.
Schneider, Alfred: *See—*
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Schneider, Jakob H.: *See—*
Duczmal, Tomasz; and Schneider, Jakob H., 5,192,423, Cl. 209-164.000.
Schneider, Richard T.; and Keates, Richard H. One-piece bifocal intraocular lens construction. 5,192,318, Cl. 623-6.000.
Schnell, Philip G.: *See—*
Patel, Mansukh M.; Broderick, Kevin B.; Meyers, Marc A.; Schnell, Philip G.; Song, Joo H.; Yatka, Robert J.; and Zibell, Steven E., 5,192,563, Cl. 426-5.000.
Schoepf, Victor L.: *See—*
Troyer, William H.; and Schoepf, Victor L., 5,192,948, Cl. 340-855.100.
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Schofield, Kenneth; Gahan, Richard J.; Schierbeek, Kenneth L.; and Larson, Mark L., to Donnelly Corporation. Single sensor adaptive drive circuit for rearview mirror system. 5,193,029, Cl. 359-604.000.
Schofield, Philip W.; Stonikas, Paul R.; and McGinley, James W., to Methode Electronics, Inc. Method of terminating optical fiber utilizing a plastic alignment ferrule with polishing pedestal. 5,193,133, Cl. 385-85.000.
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Schoner, Brigitte E.; and Schoner, Ronald G., 5,192,669, Cl. 435-69.400.
Schooler, Anthony R.: *See—*
Strout, Robert E., II; Spix, George A.; Miller, Edward C.; Schooler, Anthony R.; Silbey, Alexander A.; Phelps, Andrew E.; Vanderwarn, Brian D.; and Gaertner, Gregory G., 5,193,187, Cl. 395-650.000.
Schoroth, Anno; and Koopmann, Theo, to Leybold AG. Measured value receiver for vacuum measurement. 5,191,799, Cl. 73-753.000.
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Brambach, Johan A., 5,192,482, Cl. 264-257.000.
Schroder, Joris, deceased (by Schroder-Muller, Irmgard, heiress), to Inventio AG. Apparatus for selecting an elevator car for physically handicapped persons from a group of elevators with immediate allocation of target calls. 5,192,836, Cl. 187-126.000.
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Schroder, Joris, deceased, 5,192,836, Cl. 187-126.000.
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Ball, Anthony A.; and Rodiger, Ulrich, 5,191,760, Cl. 57-263.000.

Schuermeyer, Fritz L.; Cook, Paul E.; Martinez, Edgar J.; and Martinez, Marino J., to United States of America, Air Force. Making staggered complementary heterostructure FET. 5,192,698, Cl. 437-40.000.

Schulman, Marvin D.: *See*—
Arison, Byron H.; Schulman, Marvin D.; and Doherty, Patrick J., 5,192,671, Cl. 435-101.000.

Schulte, Gary R.: *See*—
Goddard, Carl J.; Hanson, Douglas C.; and Schulte, Gary R., 5,192,790, Cl. 514-414.000.

Schulz, Wolfgang, to ABB Reaktor GmbH. Apparatus for the neutron-radiography testing of a boiling water reactor control element. 5,192,491, Cl. 376-159.000.

Schuster, Ludwig: *See*—
Henn, Rolf; Hinz, Werner; Schuster, Ludwig; and Vorspohl, Klaus, 5,192,813, Cl. 521-159.000.

Schwab, Henry J., Jr. Sensing mat, and methods of constructing and utilizing same. 5,192,932, Cl. 340-604.000.

Schwan-Stabilo Schwanhaeusser GmbH & Co: *See*—
Moeck, Gerhard, 5,192,154, Cl. 401-198.000.

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Bilof, Richard M.; and Schwartz, Stuart E., 5,191,885, Cl. 128-419.00D.

Schwarzli, Josef W. Brush housing for bulk vendor. 5,191,998, Cl. 221-203.000.

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Scott, Charles B., to CBS Scientific, Inc. Electrophoresis gel sealing gasket and system. 5,192,408, Cl. 204-182.800.

Scott, Gerald R.; and Cox, James M., to Standex International. Chiropractic manipluation table with flexion/distraction headpiece. 5,192,306, Cl. 606-243.000.

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Toensing, Eyvand E., 5,191,705, Cl. 29-764.000.

Searl, Stephen: *See*—
Severance, Martin C.; and Searl, Stephen, 5,191,776, Cl. 62-513.000.

Sears, Marilyn R.: *See*—
Skeels, Gary W.; and Sears, Marilyn R., 5,192,522, Cl. 423-713.000.

Seberger, David A., to Supercomputer Systems Limited Partnership. Vectorized LR parsing of computer programs. 5,193,192, Cl. 395-700.000.

Secrest, Bruce G.: *See*—
Weiglein, Arthur B.; Keho, Timothy H.; and Secrest, Bruce G., 5,193,077, Cl. 367-23.000.

Seefried, Douglas; and Stone, Vernon E. Oilfield cementing tool and method. 5,191,932, Cl. 166-291.000.

Seeley, Douglas A.: *See*—
Shaw, Sonya Y.; and Seeley, Douglas A., 5,192,641, Cl. 430-200.000.

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Alonso, Carol T.; Bender, Donald A.; Bowman, Barry R.; Burnham, Alan K.; Chesnut, Dwayne A.; Comfort, William J., III; Guymon, Lloyd G.; Henning, Carl D.; Pedersen, Knud B.; Sefcik, Joseph A.; Smith, Joseph A.; and Strauch, Mark S., 5,191,940, Cl. 169-69.000.

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Seiko Epson Corporation: *See*—
Komatsu, Hiroshi, 5,192,240, Cl. 445-24.000.
Kunugi, Masanao; Kin, Hidenori; and Handa, Tsuneo, 5,192,636, Cl. 430-109.000.
Yokouchi, Hideaki, 5,193,198, Cl. 395-750.000.

Seiko Seiki Kabushiki Kaisha: *See*—
Kogure, Toshiharu, 5,191,811, Cl. 74-574.000.

Seki, Hiroyuki: *See*—
Kimura, Atsushi; Seki, Hiroyuki; and Nishimoto, Yoshifumi, 5,192,890, Cl. 310-323.000.

Seki, Takahito: *See*—
Kanota, Keiji; and Seki, Takahito, 5,193,035, Cl. 360-51.000.

Sekiguchi, Hisao: *See*—
Yokoyama, Kazuaki; Taniguchi, Kiyomi; Sekiguchi, Hisao; and Kaneko, Tomiatsu, 5,192,568, Cl. 426-94.000.

Sekine, Masayoshi: *See*—
Tokumitsu, Jun; Yoshii, Minoru; Suda, Shigeyuki; and Sekine, Masayoshi, 5,192,998, Cl. 358-41.000.

Sekisui Kaseihin Koygo Kabushiki Kaisha: *See*—
Kishi, Teruo; Shiwa, Mitsuharu; Ohara, Yoshinobu; and Nakagami, Yasuhiro, 5,191,796, Cl. 73-632.000.

Sekiya, Masahiko; Ishizaki, Takayuki; and Chiba, Kiyoshi, to Teijin Limited. Optical recording medium. 5,192,626, Cl. 428-694.000.

Semiconductor Energy Laboratory Co., Ltd.: *See*—
Hosokawa, Makoto, 5,192,991, Cl. 257-51.000.
Watanabe, Toshio, 5,193,019, Cl. 359-62.000.
Yamazaki, Shunepi; Urata, Kazuo; Koyama, Itaru; and Hirose, Naoki, 5,192,995, Cl. 257-787.000.

Sentrol, Inc.: *See*—
Smith, Richard A.; and Bernhardt, Christopher A., 5,192,931, Cl. 340-550.000.

Seo, Naobumi: *See*—
Osawa, Hideaki; and Seo, Naobumi, 5,193,081, Cl. 369-44.260.

Seo, Yosuke: *See*—
Tsuyoshi, Toshiaki; Seo, Yosuke; Aoi, Hajime; and Saito, Makoto, 5,193,034, Cl. 360-51.000.

Seon, Georges: *See*—
Beyne, Patrick; and Seon, Georges, 5,192,424, Cl. 210-85.000.

Serikawa, Yoshio: *See*—
Shinohara, Junichi; Ohno, Yoshimi; Serikawa, Yoshio; and Nishida, Tohru, 5,192,964, Cl. 354-202.000.

Seto, Nobuo; and Morigaki, Masakazu, to Fuji Photo Film Co., Ltd. Silver halide color photographic material containing a color image stabilizer. 5,192,650, Cl. 430-546.000.

Seto, Tsuneo: *See*—
Ohmori, Kazuo; Seto, Tsuneo; Itakura, Hitoshi; Kohno, Mikio; Nagao, Masaru; Morishita, Tatsuya; and Tanigawa, Masayuki, 5,191,780, Cl. 72-164.000.

Seto, Yoichi, to Hitachi, Ltd. Method and device for storing data subjected to dispersion processing. 5,193,173, Cl. 395-425.000.

Severance, Martin C.; and Searl, Stephen, to General Electric Company. Household refrigerator with improved circuit. 5,191,776, Cl. 62-513.000.

Seymour, Kenneth S.; and Sonnenburg, Dennis T., to NCR Corporation. Document feeder employing a belt. 5,192,069, Cl. 271-35.000.

SGS-Thomson Microelectronics, Inc.: *See*—
Hodges, Robert; and Bryant, Frank, 5,192,707, Cl. 437-70.000.

SGS-Thomson Microelectronics, S.A.: *See*—
Artieri, Alain, 5,193,203, Cl. 395-800.000.
Imbert, Michel; and Lambert, Frederic, 5,192,997, Cl. 358-21.00R.

Shaffer, Howard R.: *See*—
Rudy, William J., Jr.; and Shaffer, Howard R., 5,192,832, Cl. 174-52.100.

Shah, Dipak J., to Honeywell Inc. Intelligent setpoint changeover for a programmable thermostat. 5,192,020, Cl. 236-46.00R.

Shalon, Yehuda, to MODcol Corporation. Slurry compressor, apparatus for guiding compresser, and method for packing slurry in column. 5,192,433, Cl. 210-198.200.

Shamblee, Dwight A.: *See*—
Lo, Young S.; Nolan, Joseph C.; and Shamblee, Dwight A., 5,192,785, Cl. 514-399.000.

Shanks, Ian A., to Thorn EMI plc. Cholesteric liquid crystal screen which reflects substantially all of the projected light. 5,193,015, Cl. 359-53.000.

Shape Inc.: *See*—
Ruggiero, Ralph; Plourde, Thomas R.; and Kaczynski, Joseph, Jr., 5,191,694, Cl. 29-430.000.

Shapira, Nadiv; and Wright, John T. M. Vortex smoke remover for electrosurgical devices. 5,192,267, Cl. 604-22.000.

Shapiro, Wilbur: *See*—
Jones, Henry F., Jr.; and Shapiro, Wilbur, 5,192,083, Cl. 277-29.000.

Sharkey, Hugh R.: *See*—
Danforth, John W.; Kraus, Jeff L.; Horzewski, Michael J.; and Sharkey, Hugh R., 5,192,295, Cl. 606-194.000.

Sharp, Ivan. Prefabricated simulated wrought iron and like fencing systems and methods. 5,192,054, Cl. 256-24.000.

Sharp Kabushiki Kaisha: *See*—
Kusada, Tokutarou, 5,192,945, Cl. 340-784.000.
Miyake, Tomoyuki; Nakayama, Junichiro; Katayama, Hiroyuki; Takahashi, Akira; and Ohta, Kenji, 5,193,082, Cl. 369-112.000.
Ohta, Kenji; and Van, Kazuo, 5,192,644, Cl. 430-338.000.
Yamada, Yoshikado; Yamasaki, Kimihito; Yoshiura, Syoichiro; Ogita, Kazuyuki; and Iwasa, Osamu, 5,192,942, Cl. 340-706.000.

Sharrow, John A. Flush limiting mechanism. 5,191,662, Cl. 4-325.000.

Shatas, Remigius G.: *See*—
Asprey, Robert R.; and Shatas, Remigius G., 5,193,200, Cl. 395-800.000.

Shaw, Robert H.: *See*—
Kalb, Irvin M.; Shaw, Robert H.; and Ram, Michael J., 5,192,271, Cl. 604-116.000.

Shaw, Sonya Y.; and Seeley, Douglas A., to Hoechst Celanese Corporation. Method of thermal wax transfer as a mask for digital color proofing. 5,192,641, Cl. 430-200.000.

Shay, Gregory D., to Union Carbide Chemicals & Plastics Technology Corporation. Method of coating substrates utilizing an alkali-functional associative thickner containing coating composition. 5,192,592, Cl. 427-358.000.

Shen, Jian-Kuo: *See*—
Barlow, George J.; Keeley, James W.; Lemay, Richard A.; Shen, Jian-Kuo; Ledoux, Robert V.; Joyce, Thomas F.; Kelly, Richard P.; Miller, Robert C.; and Ledoux, Frances A., 5,193,181, Cl. 395-575.000.

Shepherd, Robert; and Dauber, Neal, to Ellcon National, Inc. Protective cover for emply/load valve actuator. 5,192,119, Cl. 303-22.800.

Sherman, Edward S., to Raychem Corporation. Coating metal on poly(aryl ether ketone) surfaces. 5,192,590, Cl. 427-304.000.

Shetty, Chandrashekar S.: *See*—
Huang, Shu-Jen W.; Shetty, Chandrashekar S.; Bui, Nang T.; Dunn, Yvonne O.; Bhattacharyya, Uma; and Bhattacharyya, Bhupati R., 5,192,449, Cl. 210-712.000.

Shetty, H. Ravindranath; Ottersberg, Walter H.; Parr, Jack E.; and Crowninshield, Roy D., to Zimmer, Inc.; and Bristol-Myers Squibb Co. Method of surface hardening orthopedic implant devices. 5,192,323, Cl. 623-16.000.

Shibaoka, Hideo: *See*—
Amari, Takashi; and Shibaoka, Hideo, 5,193,147, Cl. 395-145.000.

Shibata, Junichirou, to Tokyo Electron Limited. Semiconductor device testing apparatus with positioning mechanism. 5,192,908, Cl. 324-158.00F.
Shibata, Tohru; Namikoshi, Hajime; and Okamoto, Ichiro, to Daicel Chemical Industries, Ltd. Separating with an agent comprising an aliphatic ester of a polysaccharide. 5,192,444, Cl. 210-635.000.
Shiber, Samuel. Flexible thrombectomy system. 5,192,268, Cl. 604-53.000.
Shibukawa, Takeo, to Yamaha Corporation. Electronic musical instrument having multiple operation modes. 5,192,824, Cl. 84-615.000.
Shibuya, Satoshi: *See*—
Kuramoto, Koshi; Nakagawa, Tsuguhiko; Shibuya, Satoshi; Ogawa, Takao; Kaihara, Toshikazu; and Furukawa, Kusuo, 5,192,485, Cl. 266-80.000.
Shichionohe, Daisuke: *See*—
Aoki, Kazuo; and Shichionohe, Daisuke, 5,192,879, Cl. 307-451.000.
Shiina, Kanichi; Suzuki, Katsuhisa; and Yamamoto, Yuji, to Showa Aluminum Corporation. Refrigerant receiver. 5,191,775, Cl. 62-503.000.
Shimada, Shizuo; Iwata, Daiji; and Sato, Wakao, to Mitsui Toatsu Chemicals, Inc. Anti-ganglioside GD_1A monoclonal antibody MZ, MZ-producing cells and MZ-containing reagent. 5,192,662, Cl. 435-7.230.
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Komi, Hideto, 5,192,866, Cl. 250-310.000.
Shimamura, Masahiko: *See*—
Kamioka, Hideki; and Shimamura, Masahiko, 5,191,869, Cl. 123-494.000.
Shimano, Inc.: *See*—
Nagano, Masashi, 5,192,248, Cl. 474-140.000.
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Sato, Jun, 5,192,036, Cl. 242-268.000.
Tsutsumi, Yasuhiro; and Ohtsubo, Yutaka, 5,193,144, Cl. 395-76.000.
Shimazaki, Tsutomu: *See*—
Mizumoto, Masao; Ougino, Kouichirou; Shimazaki, Tsutomu; Inoue, Tomohiro; and Okada, Yasuhiro, 5,192,902, Cl. 318-561.000.
Shimek, Daniel C.: *See*—
Shimek, Ronald J.; and Shimek, Daniel C., 5,191,877, Cl. 126-512.000.
Shimek, Ronald J.; and Shimek, Daniel C. Insertable gas conversion unit. 5,191,877, Cl. 126-512.000.
Shimo, Norio, to Sony Corporation. Signal transmission reception switching apparatus. 5,193,218, Cl. 455-80.000.
Shimoi, Hiroshi; Inadomi, Takafumi; Nakamura, Ryoichi; and Kawahara, Kan, to Mitsubishi Denki Kabushiki Kaisha. Magnetic recording and reproducing apparatus incorporating clogging detection. 5,193,033, Cl. 360-31.000.
Shimozono, Akira: *See*—
Murase, Isao; and Shimozono, Akira, 5,193,062, Cl. 364-426.040.
Shimura, Teruyuki, to Mitsubishi Denki Kabushiki Kaisha. Method of making field effect transistor. 5,192,700, Cl. 437-41.000.
Shin-Etsu Chemical Co., Ltd.: *See*—
Inoue, Yoshifumi; Saito, Kin; Imai, Keisuke; and Arai, Masatoshi, 5,192,364, Cl. 106-287.160.
Minemura, Masahiko; Takahashi, Takayuki; and Kuwata, Satoshi, 5,192,458, Cl. 252-42.700.
Shin-Etsu Handotai Co., Ltd.: *See*—
Nakazato, Yasuaki; and Ogawara, Hiroo, 5,191,738, Cl. 51-283.00R.
Shin, Young S.: *See*—
Choi, Jun K.; Choi, Mun K.; Kim, Kyung S.; Jeong, Tae S.; and Shin, Young S., 5,193,088, Cl. 370-60.000.
Shinmura, Yoshiaki; and Imai, Kazuo, to Hitachi, Ltd. Method of managing space of peripheral storages and apparatus for the same. 5,193,171, Cl. 395-425.000.
Shinohara, Junichi; and Ohno, Yoshimi, to Ricoh Company, Ltd. Focus state detection device. 5,192,860, Cl. 250-201.800.
Shinohara, Junichi; Ohno, Yoshimi; Serikawa, Yoshio; and Nishida, Tohru, to Ricoh Company, Ltd. Camera having blurring movement correction mechanism. 5,192,964, Cl. 354-202.000.
Shinozaki, Katsuo; Ishii, Katsuyuki; and Ueda, Ikuo, to Zeria Pharmaceutical Co., Ltd. Substituted acetamide derivatives, process for their preparation and antiulcer drug containing same. 5,192,774, Cl. 514-315.000.
Shiokawa, Youichi; Okumura, Kazuo; Take, Kazuhiko; and Tsubaki, Kazunori, to Fujisawa Pharmaceutical Co., Ltd. Substituted-acetamide compound and a process for the preparation thereof. 5,192,779, Cl. 514-346.000.
Shiozaki, Iwane; Toyooka, Takehiro; and Iida, Shigeki, to Nippon Oil Company, Limited. Method for producing compensator for liquid crystal display. 5,193,020, Cl. 359-73.000.
Shiraishi, Shirou: *See*—
Kodaka, Kenji; Kinoshita, Katsutoshi; Nakaya, Michihiko; Ebihara, Koichi; Shiraishi, Shirou; Yamada, Eiichi; and Numata, Satoshi, 5,192,778, Cl. 514-341.000.
Shiwa, Mitsuharu: *See*—
Kishi, Teruo; Shiwa, Mitsuharu; Ohara, Yoshinobu; and Nakagami, Yasuhiro, 5,191,796, Cl. 73-632.000.
Shon, Russell D., to Eastman Kodak Company. Data deskewing apparatus utilizing bank switched random access memories. 5,193,164, Cl. 395-425.000.
Shono, Toshiyuki: *See*—
Oyama, Noboru; and Shono, Toshiyuki, 5,192,417, Cl. 204-418.000.
Shoon, Eong-Chau: *See*—
Hu, Ming-Thy; Hwang, Yun-Wen; Hwang, Min-Shang; and Shoon, Eong-Chau, 5,192,025, Cl. 239-394.000.
Showa Aluminum Corporation: *See*—
Shiina, Kanichi; Suzuki, Katsuhisa; and Yamamoto, Yuji, 5,191,775, Cl. 62-503.000.
Showa Denko K.K.: *See*—
Hasegawa, Mitsuru; Hiraiwa, Tadashi; and Hatanaka, Tetsuo, 5,192,339, Cl. 51-309.000.
Shteynberg, Boris, to Kass Enterprises. Adjustable paintbrush holder. 5,191,973, Cl. 206-15.200.
Shur, Robert D.: *See*—
Hartoog, Mark R.; Rowson, James A.; Shur, Robert D.; and Van Egmond, Kenneth D., 5,193,092, Cl. 371-22.400.
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Sibley, John: *See*—
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Hickisch, Gerhard, 5,192,973, Cl. 355-215.000.
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Schweigert, Ralf; and Donat, Albrecht, 5,192,917, Cl. 328-162.000.
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Cook, John E., 5,191,870, Cl. 123-520.000.
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Jelley, Kevin W.; and Maclay, G. J., 5,191,784, Cl. 73-31.060.
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Espenhain, Manfred, 5,191,701, Cl. 29-605.000.
Sigma, Inc.: *See*—
Komori, Takashi, 5,192,076, Cl. 273-138.00A.
Sigma-Tau Industrie Farmaceutiche Riunite S.p.A.: *See*—
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Rudd, Robert E., III, 5,192,862, Cl. 250-227.210.
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Landsberg, Thomas J., 5,192,146, Cl. 405-259.100.
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Layport, John L., 5,191,790, Cl. 73-170.330.
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Bordsen, Donald T.; Cooper, Thomas P.; Esson, Robert F.; Hill, Michael J.; Jordan, John R.; Kessler, James E.; Konrad, Dennis

R.; Sipple, Ralph E.; Swenson, Robert E.; Torgerson, James F.; and vonArx, Anthony P., 5,193,162, Cl. 395-425.000.
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Trombella, Remo, 5,191,800, Cl. 73-861.740.
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Wunderlich, Helmut; Stark, Andreas; Lohmann, Dieter; Zenkar, Lothar; Bartsch, Reni; Poppe, Hildegard; Skoldinov, Aleksandr P.; Kaverina, Natalja V.; Grizenko, Anna N.; Lyskovzev, Valentin V.; and Grigoreva, Ekaterina K., 5,192,760, Cl. 514-217.000.
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SKW Trostberg Aktiegesellschaft: *See*—
Rust, Ulrich, 5,192,690, Cl. 436-106.000.
Slater, Charles R.: *See*—
Smith, Kevin W.; Slater, Charles R.; Murphy, Gregory J.; Bales, Thomas O.; Box, John W.; and Scarfone, Frank A., 5,192,298, Cl. 606-205.000.
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Hoefler, Andrew C.; Sleap, Julia A.; and Trudso, Jens E., 5,192,575, Cl. 426-573.000.
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Ling, Robin S. M.; Gie, Graham A.; Mikhail, W. E. Michael; Elting, James J.; and Slooff, Tom J. J. H., 5,192,283, Cl. 606-93.000.
Sloteman, Donald P.: *See*—
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Sluga, Robert M.: *See*—
Grant, David C. H.; Watkins, Randolph H.; Sluga, Robert M.; Wurgler, Steven J.; Mills, Gregory D.; Berry, Dennis C.; and Fisher, Jerry D., 5,192,340, Cl. 55-23.000.
Slutter, Warren S.; Marcovecchio, Joseph; Heinz, Robert E.; and Kolb, David A., to Spex Industries, Inc. Czerny-Turner monochromator. 5,192,981, Cl. 356-334.000.
Smalley, Dennis R.; and Vorgitch, Thomas J., to 3D Systems, Inc. Simultaneous multiple layer curing in stereolithography. 5,192,469, Cl. 264-22.000.
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Hull, Charles W.; Jacobs, Paul F.; Schmidt, Kris A.; Smalley, Dennis R.; and Vinson, Wayne A., 5,192,559, Cl. 425-89.000.
SMC Kabushiki Kaisha: *See*—
Nagai, Shigekazu; Sakurai, Shuuzou; and Kawamoto, Tadasu, 5,192,070, Cl. 271-90.000.
Smimizu, Katsuichi; Sawamura, Osamu; Masuda, Shunichi; Tomosada, Masahiro; and Sakamaki, Hisashi, to Canon Kabushiki Kaisha. Image forming apparatus with image forming interruption capabilities. 5,192,971, Cl. 355-206.000.
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Smith, Alan M.: *See*—
Attridge, John W.; and Smith, Alan M., 5,192,502, Cl. 422-57.000.
Smith, Daniel L., to Racal-Datacom, Inc. Network management system with group naming. 5,193,152, Cl. 395-200.000.
Smith, David M.: *See*—
Wajer, Mark T.; Smith, David M.; and Miles, Vernon D., 5,192,337, Cl. 44-602.000.
Smith, Delbert L., Sr. Telescopic truck rack. 5,192,107, Cl. 293-3.000.
Smith, Don: *See*—
Dalrymple, Monte J.; Smith, Don; and Brubaker, Lois F., 5,193,199, Cl. 395-775.000.
Smith, Douglas W.: *See*—
Eger, Douglas R.; Smith, Douglas W.; and Dawson, Robert E., 5,192,427, Cl. 210-133.000.
Smith, Earl B.: *See*—
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Smith, Frank V., Jr.: *See*—
Nadeau, Ronald P.; and Smith, Frank V., Jr., 5,191,909, Cl. 135-93.000.
Smith, Joseph A.: *See*—
Alonso, Carol T.; Bender, Donald A.; Bowman, Barry R.; Burnham, Alan K.; Chesnut, Dwayne A.; Comfort, William J., III; Guymon, Lloyd G.; Henning, Carl D.; Pedersen, Knud B.; Sefcik, Joseph A.; Smith, Joseph A.; and Strauch, Mark S., 5,191,940, Cl. 169-69.000.
Smith, Kevin W.; Slater, Charles R.; Murphy, Gregory J.; Bales, Thomas O.; Box, John W.; and Scarfone, Frank A., to Symbiosis Corporation. Disposable laparoscopic surgical instruments. 5,192,298, Cl. 606-205.000.
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Chang, Fu-Kuo; Reiftnider, Kenneth; Davidson, James A.; and Georgette, Frederick S., 5,192,330, Cl. 623-22.000.
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Bourcier, Gilbert F.; Krzyston, John F.; Smith, Philip E.; and Venable, Larry C., 5,192,359, Cl. 75-10.670.
Smith, Richard A.; and Bernhardt, Christopher A., to Sentrol, Inc. Dual channel glass break detector. 5,192,931, Cl. 340-550.000.
Smith, Rowland C., to ITW Limited. Miniature electronic pressure gauge. 5,191,797, Cl. 73-714.000.
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Collins, Henry B.; Mosser, Benjamin H., III; and Smith, Steven G., 5,192,228, Cl. 439-567.000.
Smith, Thomas J., Jr.: *See*—
Chantry, Peter J.; Weinert, Robert W.; Tallisa, Salvador H.; McAvoy, Bruce R.; and Smith, Thomas J., Jr., 5,192,921, Cl. 331-3.000.
Smith, William L.: *See*—
Clark, Robin D.; Eglen, Richard M.; Muchowski, Joseph M.; Smith, William L.; and Weinhardt, Klaus K., 5,192,770, Cl. 514-305.000.
Smithwick, Robert P., II: *See*—
Berdinsky, Marvin; Smithwick, Robert P., II; Wilson, Michael J.; and Antetomaso, Charles J., 5,191,732, Cl. 43-55.000.
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Snoddy, Lowell G. Hollow grinding fixture. 5,191,737, Cl. 51-218.00R.
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So, Bernard Y. C., to Amoco Corporation. Oil shale beneficiation process using a spiral separator. 5,192,422, Cl. 209-164.000.
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McDonald, James A.; Comroe, Richard A.; Sobti, Arun; Bocci, Paul M.; Furtaw, Robert W.; and Hiben, Bradley M., 5,193,101, Cl. 375-1.000.
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Societe Franco-Belge de Fabrication de Combustibles-FBFC: *See*—
Duthoo, Dominique, 5,192,846, Cl. 219-121.630.
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Delprato, Francois; Guth, Jean-Louis; Hoffner, Frederique; and Zivkov, Catherine, 5,192,520, Cl. 423-702.000.
Soeder, Carl A.: *See*—
Barbour, Russell G.; Soeder, Carl A.; and Ciavaglia, Stephen J., 5,193,157, Cl. 395-375.000.
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Jones, C. Andrew; Gaffney, Anne M.; Leyshon, David W.; Cozzone, Glenn E.; and Sofranko, John A., 5,192,809, Cl. 521-40.000.
Sogo, Hiroyuki; Kondo, Yasuyuki; and Yamazaki, Kazuhisa, to Fujitsu Limited; and Fuji Electrochemical Co., Ltd. Dielectric filter with attenuation poles. 5,192,926, Cl. 333-204.000.
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Uemura, Seiichi; Sohda, Yoshio; Kato, Osamu; Kouno, Takefumi; and Kihara, Tsutomu, 5,192,471, Cl. 264-29.500.
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Provost, Joseph G., 5,192,721, Cl. 501-113.000.
Werquin, Dominique, 5,191,924, Cl. 164-418.000.
Soman, Satish: *See*—
Awiszio, Desiree A.; Soman, Satish; and Clark, Paul H., 5,193,149, Cl. 395-200.000.
Son, Jin-Hyun, to Samsung Electronics Co., Ltd. Circuit for saving battery for use in a radio paging receiver and method thereof. 5,193,212, Cl. 455-38.300.
Sone, Akira: *See*—
Tsuyama, Toshiaki; Nobumoto, Kazutoshi; Kageyama, Fumio; Sone, Akira; and Kawamura, Makoto, 5,193,061, Cl. 364-426.020.
Soneda, Hideo; Yamashita, Junichi; Fukasawa, Yukihisa; Ueki, Taro; and Izutsu, Sadayuki, to Hitachi, Ltd. Fuel assembly and upper tie plate thereof. 5,192,496, Cl. 376-428.000.
Song, Joo H.: *See*—
Patel, Mansukh M.; Broderick, Kevin B.; Meyers, Marc A.; Schnell, Philip G.; Song, Joo H.; Yatka, Robert J.; and Zibell, Steven E., 5,192,563, Cl. 426-5.000.
Sonic Electric, Inc.: *See*—
Clark, George W.; and List, Jens L., Jr., 5,192,229, Cl. 439-604.000.
Sonnenburg, Dennis T.: *See*—
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Sonobe, Kaoru, to NEC Corporation. Plastic packaged semiconductor device. 5,193,053, Cl. 257-668.000.
Sony Corporation: *See*—
Kanota, Keiji; and Seki, Takahito, 5,193,035, Cl. 360-51.000.
Komatsu, Yasutoshi, 5,192,923, Cl. 333-116.000.
Kondo, Tetsujiro, 5,193,003, Cl. 358-136.000.
Shimo, Norio, 5,193,218, Cl. 455-80.000.
Suzuki, Hideto; Kurose, Yoshikazu; and Aoki, Shinji, 5,192,949, Cl. 341-68.000.
Yamada, Masahiro; and Kishima, Koichiro, 5,193,023, Cl. 359-245.000.

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Sorrento Engineering Corporation: *See*—
Hill, Francis U., 5,192,810, Cl. 521-52.000.

Sosin, Laurent, to Usinor Sacilor. Roll for a device for the direct continuous casting of thin strips of molten metal. 5,191,925, Cl. 164-428.000.

Sotack, John D.: *See*—
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Soto, Thierry: *See*—
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Sotomayor, Guy G.: *See*—
Bealkowski, Richard; Dayan, Richard A.; Doria, David J.; Kinnear, Scott G.; Krantz, Jeffrey I.; Liverman, Robert B.; Sotomayor, Guy G.; Williams, Donald D.; and Vaiskauckas, Gary A., 5,193,161, Cl. 395-400.000.

Soukup, Thomas G., to Celotex Corporation, The; and Apache Building Products Company. Dispersant for carbon black-filled foam. 5,192,607, Cl. 428-314.400.

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Soutoul, Michel, to Alcatel CIT. System for detecting overwriting of data in a buffer memory, particularly for a data switch. 5,193,153, Cl. 395-250.000.

Spaghetti Express S.r.l.: *See*—
Caffarella, Giuseppe, 5,191,829, Cl. 99-352.000.

Sparrow, Jesse R.; and Estep, John A., to Hasselmann, Don; and Oakes, Kenneth. Outside-corner plastering tool. 5,192,558, Cl. 425-87.000.

Spector, George: *See*—
Purvis, Edward; and Spector, George, 5,193,026, Cl. 359-516.000.

Spectra Diode Laboratories, Inc.: *See*—
Welch, David F.; Scifres, Donald R.; and Streifer, William, 5,193,098, Cl. 372-46.000.

Spectrospin AG: *See*—
Hepp, Phillip; Tschopp, Werner H.; Rindlisbacher, Martin; and Schett, Oskar, 5,192,910, Cl. 324-315.000.

Spectrum Sciences B.V.: *See*—
Landa, Benzion; Ben-Auraham, Peretz; Hall, Joseph; and Gibson, George A., 5,192,638, Cl. 430-137.000.

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Spencer, Victor V., deceased; Spencer, Mary, executrix; and Bagrin, Leonid A., 5,192,602, Cl. 428-179.000.

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Spex Industries, Inc.: *See*—
Slutter, Warren S.; Marcovecchio, Joseph; Heinz, Robert E.; and Kolb, David A., 5,192,981, Cl. 356-334.000.

Spiller, Elke H. vom Baur nee, Silke V. C. vom Baur, legal heirs: *See*—vom Baur, Hans-Karl W., deceased; Dapperheld, Steffen; Kretschmann, Klaus; Lindner, Werner; Rossmeissl, Rudolf; Milluwe, Hans; and Ullmann, Gerhard, 5,192,411, Cl. 204-280.000.

Spilman, Charles H.: *See*—
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Spink, Donald R., to Turbotak Inc. Gas reacting method. 5,192,517, Cl. 423-243.080.

Spisak, Anthony F.; and Kirn, James A., to Elopak Systems A.G. Rotating carton transfer mechanism. 5,191,964, Cl. 198-447.000.

Spitz, Roger: *See*—
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Spix, George A.: *See*—
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Spliethoff, Heinz, to Saarbergwerke Aktiengesellschaft. Method of reprocessing sewage sludge. 5,191,845, Cl. 110-346.000.

Spotorno, Lorenzo; and Frey, Otto, to Sulzer Brothers Limited. Shank for a femur head prosthesis. 5,192,331, Cl. 623-23.000.

Sproesser, Linhard: *See*—
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Wittmer, Daniel L., 5,192,217, Cl. 439-211.000.

Squire, Neil C.: *See*—
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Squitieri, Anthony C., to Mechtronics Corporation. Carousel-type gravity feed film dispenser and film cassette therefor. 5,191,997, Cl. 221-119.000.

Stadelmann, Heinz: *See*—
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Standard Oil Company, The: *See*—
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Standex International: *See*—
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Standley, Donald E.: *See*—
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Stanley-Bostitch, Inc.: *See*—
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Stanley Works, The: *See*—
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Stauble, Alfred G. Water bottle crate. 5,191,994, Cl. 220-771.000.

Steelcase Inc.: *See*—
Howard, Paul L., 5,192,046, Cl. 248-676.000.

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Fontanille, Daniel, 5,191,724, Cl. 34-12.000.

Steinbicker, Richard N.: *See*—
Hughes, Charles R.; Herman, Stewart T.; and Steinbicker, Richard N., 5,192,418, Cl. 205-100.000.

Steiner, Eginhard; Beyeler, Harry; Riediker, Martin; Desobry, Vincent; Dietliker, Kurt; and Husler, Rinaldo, to Ciba-Geigy Corporation. Oxygen-containing titanocenes, and the use thereof. 5,192,642, Cl. 430-281.000.

Steinhilber, Helmut. Device for transporting sheets in office machines. 5,192,066, Cl. 271-9.000.

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Stendel, Wilhelm: *See*—
Uhr, Hermann; Marhold, Albrecht; Andres, Peter; Erdelen, Christoph; Wachendorff-Neumann, Ulrike; and Stendel, Wilhelm, 5,192,794, Cl. 514-422.000.

Stephany, Joseph F.: *See*—
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Stephens, Anthony C.: *See*—
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Stephenson, John J.: *See*—
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Stephenson, William H., Jr., to Alcatel Network Systems, Inc. Partial word to full word parallel data shifter. 5,192,950, Cl. 341-100.000.

Stepper, Fritz: *See*—
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StereoGraphics Corporation: *See*—
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Sterling, Thomas L.: *See*—
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Stevens, Eric G., to Eastman Kodak Company. Output circuit for image sensor. 5,192,990, Cl. 257-229.000.

Stevens, Eric G.: *See*—
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Stiffey, Arthur V., to United States of America, Navy. Method for evaluating anti-fouling paints. 5,192,667, Cl. 435-32.000.

Stiwitz, Roland: *See*—
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Stocklin, Clay A., to Leviton Manufacturing Co., Inc. Portable telecommunications test instrument with inductive probe circuit. 5,193,108, Cl. 379-21.000.

Stofko, John J., Jr.; and Iqbal, Mohammad, to Minnesota Mining and Manufacturing Company. Transparent liquid absorbent materials. 5,192,617, Cl. 428-411.100.

Stokley, Charles O., to TAM International. Casing circulator and method. 5,191,939, Cl. 166-379.000.

Stoller, Marshall L.: *See*—
Phan, Cu N.; and Stoller, Marshall L., 5,192,286, Cl. 606-127.000.

Stolzenberger, Florian: *See*—
Krause, Klaus D.; Schmeykal, Rudolf; and Stolzenberger, Florian, 5,192,222, Cl. 439-347.000.

Stone, Vernon E.: *See*—
Seefried, Douglas; and Stone, Vernon E., 5,191,932, Cl. 166-291.000.

Stonikas, Paul R.: *See*—
Schofield, Philip W.; Stonikas, Paul R.; and McGinley, James W., 5,193,133, Cl. 385-85.000.

Stop Circuit: *See*—
Chanois, Louis M. J., 5,193,041, Cl. 361-13.000.

Storage Technology Corporation: *See*—
Belsan, Jay S.; Rudeseal, George A.; Milligan, Charles A.; Pedersen, Mogens H.; Kitchen, John F.; and Ludlam, Henry S., 5,193,184, Cl. 395-600.000.

Story, Thomas J. Mounting system for pre-fabricated panels. 5,191,745, Cl. 52-589.000.

Stout, James T.; and DeMaio, James B., to Mead Corporation, The. Basket carrier with webbed reinforced bottom. 5,191,976, Cl. 206-198.000.

Strader, Stuart W.; and Wells, John P., to Strader, Wells & Jamison, Inc. Locker set for storing golf equipment. 5,191,978, Cl. 206-315.200.

Strader, Wells & Jamison, Inc.: *See*—
Strader, Stuart W.; and Wells, John P., 5,191,978, Cl. 206-315.200.

Straight, Dwaine D.: *See*—
Cyphers, Norman A.; Straight, Dwaine D.; and Cooper, Robert D., Jr., 5,192,425, Cl. 210-90.000.

Strand, Olaf: *See*—
Juel, Anders; Strand, Olaf; Omdal, Bjarne; and Lysfjord, Roger, 5,192,133, Cl. 383-7.000.

Strauch, Mark S.: *See*—
Alonso, Carol T.; Bender, Donald A.; Bowman, Barry R.; Burnham, Alan K.; Chesnut, Dwayne A.; Comfort, William J., III; Guymon, Lloyd G.; Henning, Carl D.; Pedersen, Knud B.; Sefcik, Joseph A.; Smith, Joseph A.; and Strauch, Mark S., 5,191,940, Cl. 169-69.000.

Streifer, William: *See*—
Welch, David F.; Scifres, Donald R.; and Streifer, William, 5,193,098, Cl. 372-46.000.

Strella, Stephen: *See*—
Work, Ray A., III; Milner, Clifford E.; Kintner, Sarah J.; Genthe, James E.; Strella, Stephen; and Iacovella, Charles R., 5,192,613, Cl. 428-363.000.

Strickland, Richard D.; and Saccomanno, Geno, to Baal Associates, Inc. Pap smear collection device with bristles oriented in a plane. 5,191,899, Cl. 128-756.000.

Strickler, Ernst, to Mottler - Toledo AG. Weighing apparatus with resiliently suspended pan support arm. 5,191,948, Cl. 177-188.000.

Stringer, Orum: *See*—
Gaffar, Abdul; Nabi, Nuran; Afflitto, John; and Stringer, Orum, 5,192,530, Cl. 424-52.000.
Gaffar, Abdul; Nabi, Nuran; Afflitto, John; Stringer, Orum; and Prencipe, Michael, 5,192,531, Cl. 424-52.000.

Strokon, Andrew. Apparatus and method for knee surgery. 5,192,321, Cl. 623-13.000.

Strout, Robert E., II; Spix, George A.; Miller, Edward C.; Schooler, Anthony R.; Silbey, Alexander A.; Phelps, Andrew E.; Vanderwarn, Brian D.; and Gaertner, Gregory G., to Supercomputer Systems Limited Partnership. Fast interrupt mechanism for interrupting processors in parallel in a multiprocessor system wherein processors are assigned process ID numbers. 5,193,187, Cl. 395-650.000.

Strunc, Robert W.; and Bango, Oscar L., to Parkson Corporation. Aeration panel structure. 5,192,467, Cl. 261-122.100.

Stryker Corporation: *See*—
Cezana, Haim; and Savage, Donald C., 5,192,292, Cl. 606-170.000.

Stumphauzer, William C.; Groth, Hugh F.; and Duncan, L. Scot, to Stumphauzer, William C. High speed process and apparatus for carbonating water. 5,192,513, Cl. 422-305.000.

Stupka, Jonathan C.; Bokros, Jack C.; Emken, Michael R.; Haubold, Axel D.; and Peters, T. Scott, to Onx, Inc. Prosthetic heart valve. 5,192,309, Cl. 623-2.000.

Stutler, Mark. Trash organizer for recycling. 5,192,121, Cl. 312-212.000.

Su, Jyh-Yeong, to Jyi Shen Industrial Co., Ltd. Plastic door lock. 5,192,097, Cl. 292-166.000.

Su, Yansheng: *See*—
Davis, Jeffrey P.; Chandrasekaran, Santosh K.; Su, Yansheng; Archibald, Roy D.; and Robinson, Joseph R., 5,192,535, Cl. 424-78.040.

Subbarao, Muralidhara, to Research Foundation of State University of New York, The. Computational methods and electronic camera apparatus for determining distance of objects, rapid autofocusing, and obtaining improved focus images. 5,193,124, Cl. 382-41.000.

Suchoski, Paul G.: *See*—
Farina, James D.; and Suchoski, Paul G., 5,193,128, Cl. 385-3.000.

Suda, Shigeyuki: *See*—
Tokumitsu, Jun; Yoshii, Minoru; Suda, Shigeyuki; and Sekine, Masayoshi, 5,192,998, Cl. 358-41.000.

Sudasassi, Richard A.: *See*—
Bealkowski, Richard; Gerald, Howard; Bharat, Khatri; Mathew, George; Mittelstedt, Matthew T.; Salvetti, Lynda M.; Sudasassi, Richard A.; and Zemanek, Carolyn J., 5,193,174, Cl. 395-500.000.

Sudo, Kiyoshi; Sakurai, Yasutomo; Odahara, Koichi; Hoshi, Kenji; and Kanaya, Hideharu, to Fujitsu Limited. Clock control circuit for suppressing clock pulses. 5,192,914, Cl. 328-72.000.

Sue, Toshio: *See*—
Imazu, Katsuhiro; Sato, Kazuhiro; Ito, Takurou; Kaneko, Shunji; and Sue, Toshio, 5,191,779, Cl. 72-46.000.

Suematsu, Shigenori; Matsumoto, Yoshikane; Sakamoto, Shinichi; and Kobayashi, Hirotaka, to Hitachi Koki Co., Ltd. Dot line printer having improved comb yoke. 5,192,148, Cl. 400-157.200.

Suffredini, Nino R.; and Anderson, James D., to Burndy Corporation. Grounding block. 5,192,233, Cl. 439-723.000.

Sugden, David B.: *See*—
Hartman, Thomas M.; and Sugden, David B., 5,192,115, Cl. 299-31.000.

Sugimoto, Kenji: *See*—
Hiroe, Toshio; and Sugimoto, Kenji, 5,191,908, Cl. 134-76.000.

Sugioka, Kayoko: *See*—
Inukai, Hiroshi; Kitahara, Takahiro; Sugioka, Kayoko; and Mizuguchi, Morio, 5,192,635, Cl. 430-108.000.

Sugiyama, Akihiko, to NEC Corporation. Interference canceller using tap-weight adaptive filter. 5,192,918, Cl. 328-165.000.

Sugiyama, Shunichi: *See*—
Sato, Toshio; Sugiyama, Shunichi; Ishii, Toshio; Nakada, Masayuki; Oosako, Takashi; and Mori, Kentaro, 5,191,928, Cl. 164-466.000.

Sugiyama, Takeyoshi: *See*—
Bowers, William S.; and Sugiyama, Takeyoshi, 5,192,787, Cl. 514-404.000.

Sugizaki, Yutaka: *See*—
Saito, Susumu; Imai, Takashi; Inoue, Satoshi; and Sugizaki, Yutaka, 5,192,637, Cl. 430-109.000.

Suguro, Kyoichi; and Okano, Haruo, to Kabushiki Kaisha Toshiba. Method of manufacturing a multilayered metallization structure in which the conductive layer and insulating layer are selectively deposited. 5,192,714, Cl. 437-195.000.

Suh, Sung S.: *See*—
Chung, Dae B.; Suh, Sung S.; and Kwak, Chun S., 5,192,277, Cl. 604-360.000.

Suire, Christian G., to Giat Industries. Initiation device for the propulsive charge of ammunition, for example telescoped ammunition, and ammunition ignited by such an ignition device. 5,192,829, Cl. 102-434.000.

Sullivan, Maureen: *See*—
Bulat, Emel S.; and Sullivan, Maureen, 5,192,699, Cl. 437-41.000.

Sulzer Brothers Limited: *See*—
Koch, Rudolf; Freudiger, Stefan; and Fluckiger, Hans, 5,192,322, Cl. 623-13.000.
Spotorno, Lorenzo; and Frey, Otto, 5,192,331, Cl. 623-23.000.

Sumi, Masatomo; Inaki, Shigeo; Takamiya, Yutaka; and Kondo, Genki, to Matsushita Electric Industrial Co., Ltd. Method of making a resin-molded motor. 5,191,698, Cl. 29-596.000.

Sumitomo Electric Industries, Ltd.: *See*—
Hoshino, Sumio; Kanamori, Hiroo; Ito, Masumi; Ishikawa, Shinji; and Aikawa, Haruhiko, 5,193,137, Cl. 385-129.000.
Matsuura, Koichi; Takeda, Fuminori; and Kurisu, Kenichi, 5,192,419, Cl. 205-244.000.
Uemiya, Takafumi; Uenishi, Naota; Mizoguchi, Akira; and Hattori, Yasuhiro, 5,192,579, Cl. 427-571.000.
Yamanishi, Toru; Kakuta, Tatsuya; and Mori, Akinori, 5,192,834, Cl. 174-120.0SR.

Sumitomo Rubber Industries, Ltd.: *See*—
Iwanaga, Takeshi; and Kawamatsu, Hideaki, 5,192.073, Cl. 273-77.00A.
Walker, John C.; and Rehal, Lavinder S., 5,192,929, Cl. 340-444.000.

Sumitomo Special Metals Co., Ltd.: *See*—
Fujimura, Setsuo; Sagawa, Masato; and Matsuura, Yutaka, 5,192,372, Cl. 148-101.000.

Sun, Donald J. C.; and Kuo, Eric C. P. Golf ball with smaller and larger dimples. 5,192,079, Cl. 273-232.000.

Sun Microsystems, Inc.: *See*—
Lajara, Robert J.; Furuta, Steven J.; and Hileman, Vincent P., 5,192,143, Cl. 403-24.000.

Sundstrand Corporation: *See*—
Galloway, Gary L.; Latos, Thomas S.; and Roe, Derrick, 5,193,054, Cl. 363-72.000.

Supelco: *See*—
Woolley, Cole L., 5,192,406, Cl. 204-180.100.

Supercomputer Systems Limited Partnership: *See*—
Seberger, David A., 5,193,192, Cl. 395-700.000.
Strout, Robert E., II; Spix, George A.; Miller, Edward C.; Schooler, Anthony R.; Silbey, Alexander A.; Phelps, Andrew E.; Vanderwarn, Brian D.; and Gaertner, Gregory G., 5,193,187, Cl. 395-650.000.

Surjaatmadja, Jim B.; and Lee, Clyde L., to Halliburton Company. Apparatus for automatic titration. 5,192,509, Cl. 422-75.000.

Sutherland, Derek R.: *See*—
Ramsay, Michael V. J.; Tiley, Edward P.; and Sutherland, Derek R., 5,192,777, Cl. 514-333.000.

Suzuki, Fumio; Nakasato, Yoshisuke; Ohmori, Kenji; Tamura, Tadafumi; Hosoe, Hisashi; Kubo, Kazuhiro; and Yoshitake, Ikufumi, to Kyowa Hakko Kogyo Co., Ltd. Pyrazoloquinoline derivatives. 5,192,768, Cl. 514-293.000.

Suzuki, Hideo; and Sakama, Masao, to Yamaha Corporation. Musical tone control apparatus employing handheld stick and leg sensor. 5,192,823, Cl. 84-600.000.

Suzuki, Hideto; Kurose, Yoshikazu; and Aoki, Shinji, to Sony Corporation. Digital data transmission system having error detecting and correcting function. 5,192,949, Cl. 341-68.000.

Suzuki, Katsuhisa: *See*—
Shiina, Kanichi; Suzuki, Katsuhisa; and Yamamoto, Yuji, 5,191,775, Cl. 62-503.000.

Suzuki, Mitsutoshi: *See*—
Tashiro, Hideo; Midorikawa, Katsumi; and Suzuki, Mitsutoshi, 5,193,095, Cl. 372-3.000.

Suzuki Motor Corporation: *See*—
Fujiwara, Hideo, 5,191,859, Cl. 123-41.440.

Suzuki, Noboru; and Toji, Shigeo, to Asahi Kogaku Kogyo K.K. Automatic focusing device. 5,192,965, Cl. 354-400.000.

Suzuki, Noritake: *See*—
Tabata, Aki; Tajika, Jun; Inagaki, Hiroshi; Kobayashi, Yukio; and Suzuki, Noritake, 5,191,798, Cl. 73-727.000.
Suzuki, Takao: *See*—
Yajima, Kiyoshi; Suzuki, Takao; Itoh, Masanori; Okuyama, Hitoshi; Uruga, Ken-ichi; and Hirabayashi, Hisanaga, 5,192,940, Cl. 338-308.000.
Suzuki, Tetsuaki, to Yazaki Corporation. Connector locking connection detection device. 5,192,225, Cl. 439-489.000.
Svenska Rotor Maskiner AB: *See*—
Olofsson, Hans, 5,192,199, Cl. 417-406.000.
Swanberg, Melvin E., to Olive Tree Technology, Inc. Scanner with non-linearity compensating pixel clock. 5,193,013, Cl. 358-481.000.
Sweet, John P. Color demonstrator. 5,192,209, Cl. 434-98.000.
Sweet, Lawrence H. Adjustable load bracing crossbar. 5,192,187, Cl. 410-151.000.
Swenson, Paul F., to Consolidated Natural Gas Service Company, Inc. Fuel-fired heat pump system. 5,192,022, Cl. 237-2.00B.
Swenson, Robert E.: *See*—
Bordsen, Donald T.; Cooper, Thomas P.; Esson, Robert F.; Hill, Michael J.; Jordan, John R.; Kessler, James E.; Konrad, Dennis R.; Sipple, Ralph E.; Swenson, Robert E.; Torgerson, James F.; and vonArx, Anthony P., 5,193,162, Cl. 395-425.000.
Switzer, Robert C., III; Campbell, Shannon K.; and Murdock, Tere L. Histological analysis method. 5,192,688, Cl. 436-63.000.
Sykes, Rachel: *See*—
Coates, Nigel J.; Sykes, Rachel; Davis, Christopher J.; and Curtis, Lawrence M., 5,192,742, Cl. 514-8.000.
Symbiosis Corporation: *See*—
Smith, Kevin W.; Slater, Charles R.; Murphy, Gregory J.; Bales, Thomas O.; Box, John W.; and Scarfone, Frank A., 5,192,298, Cl. 606-205.000.
Syntex (U.S.A.) Inc.: *See*—
Clark, Robin D.; Eglen, Richard M.; Muchowski, Joseph M.; Smith, William L.; and Weinhardt, Klaus K., 5,192,770, Cl. 514-305.000.
O-Yang, Counde; Walker, Keith A. M.; Kurz, Walter; and Wu, Helen Y., 5,192,749, Cl. 514-45.000.
Synthelabo: *See*—
George, Pascal; Menin, Jacques; Merly, Jean-Pierre; Bigg, Dennis; Obitz, Daniel; Peynot, Michel; and Veronique, Corinne, 5,192,763, Cl. 514-252.000.
Raizon, Bernard; Evanno, Yannick; and LeGalloudec, Odette, 5,192,797, Cl. 514-452.000.
Szego, Andras: *See*—
Szekely, Istvan; Szego, Andras; Pap, Laszio; Nagy, Lajos; Kollarik nee Hasek, Viktoria; Marmarosi nee Kellner, Katalin; Karadi, Zoltan; Toth, Andrea; and Szucsany, Gyorgy, 5,192,793, Cl. 514-421.000.
Szekely, Istvan; Szego, Andras; Pap, Laszio; Nagy, Lajos; Kollarik nee Hasek, Viktoria; Marmarosi nee Kellner, Katalin; Karadi, Zoltan; Toth, Andrea; and Szucsany, Gyorgy, to Chinoin Gyogyszer es Vegyeszeti Termekek Rt. Plant protective microemulsion composition comprising pyrethroids. 5,192,793, Cl. 514-421.000.
Szucsany, Gyorgy: *See*—
Szekely, Istvan; Szego, Andras; Pap, Laszio; Nagy, Lajos; Kollarik nee Hasek, Viktoria; Marmarosi nee Kellner, Katalin; Karadi, Zoltan; Toth, Andrea; and Szucsany, Gyorgy, 5,192,793, Cl. 514-421.000.
T.J. Firari Enterprises: *See*—
Firari, Harold A., 5,191,678, Cl. 16-305.000.
T-W Management Company: *See*—
Roberts, Hardy G., 5,192,176, Cl. 410-140.000.
Ta Triumph-Adler AG: *See*—
Krause, Klaus D.; Schmeykal, Rudolf; and Stolzenberger, Florian, 5,192,222, Cl. 439-347.000.
Tabata, Aki; Tajika, Jun; Inagaki, Hiroshi; Kobayashi, Yukio; and Suzuki, Noritake, to Kabushiki Kaisha Komatsu Seisakusho. Pressure sensor. 5,191,798, Cl. 73-727.000.
Tac-Fast Systems SA: *See*—
Pacione, Joseph R., 5,191,692, Cl. 29-423.000.
Tacke, Horst: *See*—
Schafer, Manfred; Schneider, Alfred; Tacke, Horst; and Hartmann, Gerhart, 5,192,012, Cl. 227-113.000.
Tadiran, Ltd.: *See*—
Lichtash, Avi; Vitelson, Israel; Huna, Zvi; Markus, Reuven; Nosatzki, Michal; Gutman, Baruch; Orbach, Shlomo; Taler, Rafi; Moshe, Yossi; Bruckman, Leon; and Agmon, Gideon, 5,193,087, Cl. 370-58.200.
Taguchi, Seiichi: *See*—
Igarashi, Shunkichi; and Taguchi, Seiichi, 5,192,969, Cl. 355-22.000.
Taha, Ziad H.: *See*—
Wang, Joseph; and Taha, Ziad H., 5,192,416, Cl. 204-409.000.
Taiwan Geni Electronics Co., Ltd.: *See*—
Chang, Ming C., 5,192,895, Cl. 315-201.000.
Tajika, Jun: *See*—
Tabata, Aki; Tajika, Jun; Inagaki, Hiroshi; Kobayashi, Yukio; and Suzuki, Noritake, 5,191,798, Cl. 73-727.000.
Takagi, Ryuichi: *See*—
Kasukabe, Susumu; and Takagi, Ryuichi, 5,191,708, Cl. 29-846.000.
Takahashi, Akira: *See*—
Miyake, Tomoyuki; Nakayama, Junichiro; Katayama, Hiroyuki; Takahashi, Akira; and Ohta, Kenji, 5,193,082, Cl. 369-112.000.
Takahashi, Ryoichi: *See*—
Iino, Katsuyoshi; Takahashi, Ryoichi; and Takeuchi, Shoji, 5,191,736, Cl. 49-484.100.
Takahashi, Takayuki: *See*—
Minemura, Masahiko; Takahashi, Takayuki; and Kuwata, Satoshi, 5,192,458, Cl. 252-42.700.
Takahashi, Toru: *See*—
Kosugi, Motoki; Matsuoka, Noriyuki; and Takahashi, Toru, 5,192,213, Cl. 439-66.000.
Takahashi, Tsutomu: *See*—
Arai, Takashi; Inada, Nakafumi; and Takahashi, Tsutomu, 5,192,993, Cl. 257-400.000.
Takahashi, Yumiko: *See*—
Sawa, Takao; Okamura, Masami; and Takahashi, Yumiko, 5,192,375, Cl. 148-306.000.
Takai, Masaaki: *See*—
Takaishi, Yoshihisa; Goto, Kiyoto; Uesako, Takuji; Kuwahara, Toshiko; Takai, Masaaki; Ono, Yukihisa; Taniguchi, Yoshihiro; Manabe, Sachiko; and Asakuni, Takahiro, 5,192,817, Cl. 549-298.000.
Takaishi, Tadao, to Mitsubishi Denki Kabushiki Kaisha. Ignition coil unit for an internal combustion engine. 5,191,872, Cl. 123-647.000.
Takaishi, Yoshihisa; Goto, Kiyoto; Uesako, Takuji; Kuwahara, Toshiko; Takai, Masaaki; Ono, Yukihisa; Taniguchi, Yoshihiro; Manabe, Sachiko; and Asakuni, Takahiro, to Otsuka Pharmaceutical Co., Ltd.; and Otsuka Pharmaceutical Factory, Inc. Phenanthrene derivatives. 5,192,817, Cl. 549-298.000.
Takaku, Hideo: *See*—
Fujitani, Matusiro; Takaku, Hideo; and Yoda, Yukiji, 5,191,717, Cl. 33-503.000.
Takakura, Koichi: *See*—
Tanihara, Masao; Yamada, Hideaki; Nakashima, Toshihide; Omura, Yoshiaki; and Takakura, Koichi, 5,192,684, Cl. 435-240.270.
Takamiya, Yutaka: *See*—
Sumi, Masatomo; Inaki, Shigeo; Takamiya, Yutaka; and Kondo, Genki, 5,191,698, Cl. 29-596.000.
Takara, Toshiyuki: *See*—
Iida, Yoshihiro; Kira, Jin; Ohshima, Yutaka; Takara, Toshiyuki; and Yamaya, Koji, 5,191,878, Cl. 128-4.000.
Takashina, Toru: *See*—
Ukawa, Naohiko; Okino, Susumu; Takashina, Toru; Onizuka, Masakazu; and Inoue, Kenji, 5,192,518, Cl. 423-244.080.
Takasugi, Motohide: *See*—
Hanada, Ryoji; Noro, Masaki; Minami, Yukimasa; and Takasugi, Motohide, 5,192,380, Cl. 152-454.000.
Take, Kazuhiko: *See*—
Shiokawa, Youichi; Okumura, Kazuo; Take, Kazuhiko; and Tsubaki, Kazunori, 5,192,779, Cl. 514-346.000.
Takechi, Satoshi: *See*—
Kotachi, Akiko; and Takechi, Satoshi, 5,192,643, Cl. 430-296.000.
Takeda, Fuminori: *See*—
Matsuura, Koichi; Takeda, Fuminori; and Kurisu, Kenichi, 5,192,419, Cl. 205-244.000.
Takei, Haruo: *See*—
Hioki, Takanori; and Takei, Haruo, 5,192,654, Cl. 430-576.000.
Takemoto, Hiroshi: *See*—
Iwasaki, Hiroaki; Takesawa, Youichi; Takemoto, Hiroshi; Tanaka, Masashi; Kimoto, Keizo; and Sakuma, Tadashi, 5,192,633, Cl. 430-59.000.
Takenouchi, Ken; Kurosawa, Kazuyuki; Horiguchi, Makoto; Imatani, Tsuneo; and Kurashima, Hideo, to Toyo Seikan Kaisha Ltd. Metal vessel having hologram of diffraction grating formed thereon. 5,193,014, Cl. 359-3.000.
Takesawa, Youichi: *See*—
Iwasaki, Hiroaki; Takesawa, Youichi; Takemoto, Hiroshi; Tanaka, Masashi; Kimoto, Keizo; and Sakuma, Tadashi, 5,192,633, Cl. 430-59.000.
Takeshima, Yasushi: *See*—
Inagaki, Akira; Kurokawa, Masao; Hasegawa, Hiroyuki; Ishibashi, Toshihiro; Hadano, Hiroaki; Hioki, Takeshi; Toriyama, Yoshimi; Fujita, Kazuo; Takeshima, Yasushi; Wakatsuki, Teruyuki; and Horiuchi, Yasushi, 5,191,778, Cl. 72-13.000.
Taketomi, Yoshinao: *See*—
Nishiwaki, Seiji; Taketomi, Yoshinao; Uchida, Shinji; Tomita, Takaaki; and Asada, Junichi, 5,193,130, Cl. 385-14.000.
Takeuchi, Ikuo; Kamejima, Kohji; Hamada, Tomoyuki; and Miyake, Norihisa, to Hitachi, Ltd. Data transfer method, data transfer apparatus and information processing system. 5,193,150, Cl. 395-200.000.
Takeuchi, Shoji: *See*—
Iino, Katsuyoshi; Takahashi, Ryoichi; and Takeuchi, Shoji, 5,191,736, Cl. 49-484.100.
Takizawa, Hiroyuki; Kawai, Sumio; and Ueha, Sadayuki, to Olympus Optical Co., Ltd. Method for producing a superior longitudinal vibrator. 5,191,688, Cl. 29-25.350.
Takubo, Yoneharu: *See*—
Iwai, Hiroshi; Takubo, Yoneharu; and Hotta, Sadayoshi, 5,193,017, Cl. 359-59.000.
Taler, Rafi: *See*—
Lichtash, Avi; Vitelson, Israel; Huna, Zvi; Markus, Reuven; Nosatzki, Michal; Gutman, Baruch; Orbach, Shlomo; Taler, Rafi; Moshe, Yossi; Bruckman, Leon; and Agmon, Gideon, 5,193,087, Cl. 370-58.200.
Tallisa, Salvador H.: *See*—
Chantry, Peter J.; Weinert, Robert W.; Tallisa, Salvador H.; McAvoy, Bruce R.; and Smith, Thomas J., Jr., 5,192,921, Cl. 331-3.000.
TAM International: *See*—
Stokley, Charles O., 5,191,939, Cl. 166-379.000.

Tamaki, Yoshiko; Kitai, Katsuyoshi; Inagami, Yasuhiro; and Tanaka, Yoshikazu, to Hitachi, Ltd. Processor system for executing processes in parallel under multitask, control method of waiting for event of process. 5,193,186, Cl. 395-650.000.

Tamaoki, Tatsuya: *See*—
Suzuki, Fumio; Kawakita, Takashi; Kuroda, Takeshi; Ohmori, Kenji; Nakajima, Hiroshi; Kamiya, Toshikazu; and Tamaoki, Tatsuya, 5,192,769, Cl. 514-293.000.

Tamura, Rie: *See*—
Oshima, Toshiyuki; Ishibashi, Hideo; Tamura, Rie; Yamamoto, Satoshi; and Izumo, Takaharu, 5,192,814, Cl. 521-163.000.

Tamura, Tadafumi: *See*—
Suzuki, Fumio; Nakasato, Yoshisuke; Ohmori, Kenji; Tamura, Tadafumi; Hosoe, Hisashi; Kubo, Kazuhiro; and Yoshitake, Ikufumi, 5,192,768, Cl. 514-293.000.

Tamura, Yoshiharu, to NEC Corporation. Vehicular power booster circuitry for multi-level portable transceiver. 5,193,219, Cl. 455-89.000.

Tan, Stephen S.: *See*—
Barrier, James M.; Drey, Mark D.; Montford, Leslie V.; and Tan, Stephen S., 5,192,384, Cl. 156-189.000.

Tanabe, Hiroto; and Yamazaki, Kazumasa, to Nippon Steel Corporation. Process for producing automobile body reinforcing steel pipe. 5,192,376, Cl. 148-520.000.

Tanabe Seiyaku Co., Ltd.: *See*—
Lobl, Thomas J.; Chiang, Shiu-Lan; and Cardarelli, Pina M., 5,192,746, Cl. 514-11.000.

Tanaka, Akihiro: *See*—
Aoki, Yasushi; Azuma, Masaaki; Tsuchigane, Shigeo; Tanaka, Akihiro; Hirayama, Katsuzo; and Tanaka, Eiichiro, 5,191,685, Cl. 24-656.000.

Tanaka, Akira: *See*—
Fujia, Takamitsu; Tanaka, Akira; Muramatsu, Kenichi; and Hattori, Tetsuo, 5,192,723, Cl. 501-136.000.

Tanaka, Eiichiro: *See*—
Aoki, Yasushi; Azuma, Masaaki; Tsuchigane, Shigeo; Tanaka, Akihiro; Hirayama, Katsuzo; and Tanaka, Eiichiro, 5,191,685, Cl. 24-656.000.

Tanaka, Hiedaki: *See*—
Hamura, Takeshi; and Tanaka, Hiedaki, 5,192,382, Cl. 156-137.000.

Tanaka, Masanori: *See*—
Kojima, Susumu; and Tanaka, Masanori, 5,192,859, Cl. 235-481.000.

Tanaka, Masashi: *See*—
Iwasaki, Hiroaki; Takesawa, Youichi; Takemoto, Hiroshi; Tanaka, Masashi; Kimoto, Keizo; and Sakuma, Tadashi, 5,192,633, Cl. 430-59.000.

Tanaka, Yoshikazu: *See*—
Tamaki, Yoshiko; Kitai, Katsuyoshi; Inagami, Yasuhiro; and Tanaka, Yoshikazu, 5,193,186, Cl. 395-650.000.

Tancrell, Roger H.: *See*—
Wilson, David T.; and Tancrell, Roger H., 5,192,470, Cl. 264-22.000.

Tandem Computers Incorporated: *See*—
Cutts, Richard W., Jr.; Norwood, Peter C.; DeBacker, Kenneth C.; Mehta, Nikhil A.; Jewett, Douglas E.; Allison, John D.; and Horst, Robert W., 5,193,175, Cl. 395-575.000.

Tani, Tadaaki, to Fuji Photo Film Co., Ltd. Method for spectrally sensitizing silver halide photographic emulsions. 5,192,653, Cl. 430-569.000.

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Ohmori, Kazuo; Seto, Tsuneo; Itakura, Hitoshi; Kohno, Mikio; Nagao, Masaru; Morishita, Tatsuya; and Tanigawa, Masayuki, 5,191,780, Cl. 72-164.000.

Taniguchi, Kiyomi: *See*—
Yokoyama, Kazuaki; Taniguchi, Kiyomi; Sekiguchi, Hisao; and Kaneko, Tomiatsu, 5,192,568, Cl. 426-94.000.

Taniguchi, Nobuyuki: *See*—
Hamada, Masataka; Ishida, Tokuji; Ishibashi, Kenji; Taniguchi, Nobuyuki; and Ootsuka, Hiroshi, 5,192,966, Cl. 354-402.000.

Taniguchi, Yoshihiro: *See*—
Takaishi, Yoshihisa; Goto, Kiyoto; Uesako, Takuji; Kuwahara, Toshiko; Takai, Masaaki; Ono, Yukihisa; Taniguchi, Yoshihiro; Manabe, Sachiko; and Asakuni, Takahiro, 5,192,817, Cl. 549-298.000.

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Guyomard, Dominique; and Tarascon, Jean-Marie, 5,192,629, Cl. 429-197.000.

Tarn, Terry: *See*—
Bull, David N.; Ozimek, Edward J.; and Tarn, Terry, 5,192,835, Cl. 174-260.000.

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Tashiro, Hideo; Midorikawa, Katsumi; and Suzuki, Mitsutoshi, to Doryokuro Kakusenryo Kaihatsu Jigyodan. Multimode raman laser system. 5,193,095, Cl. 372-3.000.

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Hakkarainen, Susan S.; Hanna, Robert S.; Jacoby, Elliot G.; and Taylor, Robert F., III, 5,191,971, Cl. 200-550.000.

Taylor, Walter R. Pedal-operated scooter. 5,192,089, Cl. 280-221.000.

Tebbe, Frederick N.: *See*—
Ittel, Steven D.; and Tebbe, Frederick N., 5,192,730, Cl. 502-108.000.

Technicon Instruments Corporation: *See*—
Cassaday, Michael M., 5,192,504, Cl. 422-64.000.

Techstrip Inc.: *See*—
Pariot, Robert; and Traugott, J. Mortimer, 5,192,381, Cl. 156-79.000.

Tecumseh Products Company: *See*—
Havens, Dale L., 5,191,813, Cl. 74-606.00R.

Tedesco, Robert J.: *See*—
Grunert, Kurt A.; Tedesco, Robert J.; Wafer, John A.; Wehrli, Henry A., III; Hapeman, Lawrence M.; and Mrenna, Stephen A., 5,193,043, Cl. 361-93.000.

Teijin Limited: *See*—
Sekiya, Masahiko; Ishizaki, Takayuki; and Chiba, Kiyoshi, 5,192,626, Cl. 428-694.000.

Tektronix, Inc.: *See*—
Mathieu, Alan E.; Wardzala, Edward D.; and Overton, Michael S., 5,192,915, Cl. 328-133.000.

Telectronics N.V.: *See*—
Gilli, Norma L.; Holley, Lorraine; Drane, Geoffrey A.; Stephens, Anthony C.; Daly, Christopher N.; and Maas, Steven M., 5,191,884, Cl. 128-419.00D.

Teleflex Incorporated: *See*—
Green, Edward A., 5,192,476, Cl. 264-127.000.

Telefonaktiebolaget L M Ericsson: *See*—
Minde, Tor B., 5,193,140, Cl. 395-2.000.

Tell, Elaine N.; and Veltman, Preston L., to Erika, Inc. Sterilant compositions. 5,192,459, Cl. 252-106.000.

Tengquist, David C.; and Kelly, Patrick M. Prefabricated pass-through service system for fast food restaurants and the like. 5,191,747, Cl. 52-36.400.

Tennelic/Nucleus Inc.: *See*—
Dudley, John M., 5,192,868, Cl. 250-374.000.

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Terajima, Hisao: *See*—
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Terpstra, Arthur J., Jr.: *See*—
Woltjer, Bernard H.; and Terpstra, Arthur J., Jr., 5,191,967, Cl. 198-781.000.

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Barnish, Ian T.; Danilewicz, John C.; James, Keith; Samuels, Gillian M. B.; Terrett, Nicholas K.; Williams, Michael T.; and Wythes, Martin J., 5,192,800, Cl. 514-510.000.

Terui, Sadao: *See*—
Mitsui, Kiichiro; Ishii, Tooru; Terui, Sadao; Sano, Kunio; and Inoue, Akira, 5,192,452, Cl. 210-760.000.

Terumo Kabushiki Kaisha: *See*—
Oyama, Noboru; and Shono, Toshiyuki, 5,192,417, Cl. 204-418.000.
Sakai, Satoru; and Ishikawa, Kiyohide, 5,192,499, Cl. 422-46.000.

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Teshigawara, Mikiro: *See*—
Kojima, Hiroshi; Sakata, Keikichi; Watanabe, Seigo; Mitsukuchi, Yukio; Hashimoto, Shuichi; Kato, Choji; Teshigawara, Mikiro; Furuhashi, Ryoichi; Momoi, Shoji; Inoue, Toshihiko; Uemura, Kazuki; and Oshima, Katsushi, 5,191,817, Cl. 82-1.110.

Tessier, Jean: *See*—
Babin, Didier; Benoit, Marc; Demoute, Jean-Pierre; and Tessier, Jean, 5,192,801, Cl. 514-521.000.

Tetra Pak Holdings S.A.: *See*—
Reil, Wilhelm; Deutschbein, Ulrich; Knobloch, Gerd; and Liebram, Udo, 5,191,988, Cl. 220-4.240.

Teulon, Jean-Marie: *See*—
Bru-Magniez, Nicole; Launay, Michele; and Teulon, Jean-Marie, 5,192,781, Cl. 514-365.000.

Texaco, Inc.: *See*—
Bartels, Craig R., 5,192,445, Cl. 210-640.000.
Cook, Fred R., Sr., 5,191,937, Cl. 166-363.000.

Texas Instruments Incorporated: *See*—
Abiko, Shigeshi; and Saiki, Shoji, 5,193,070, Cl. 364-724.160.
Bhuva, Rohit L., 5,193,073, Cl. 365-226.000.
Bolscher, Jeroen J. M., 5,192,285, Cl. 606-117.000.
Boysel, Robert M.; and Sampsell, Jeffrey B., 5,192,395, Cl. 156-643.000.
Chiu, Anthony M., 5,192,681, Cl. 437-217.000.
Houston, Theodore W., 5,193,076, Cl. 365-233.500.

McDavid, James M.; and Clark, David R., 5,192,704, Cl. 437-52.000.
Moslehi, Mehrdad M., 5,192,849, Cl. 219-121.430.
Parker, Sidney G.; Hammerbacher, Milfred D.; Levine, Jules D.; and Hotchkiss, Gregory B., 5,192,400, Cl. 205-124.000.
Rodder, Mark S., 5,192,706, Cl. 437-67.000.
Thompson, E. Earle; and DeMond, Thomas W., 5,192,946, Cl. 340-794.000.

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Theis, Kenneth R., to Emerson Electric Co. Starting multi-speed motors at a low speed connection. 5,192,887, Cl. 310-68.00C.

Theisen-Popp, Pia: *See*—
Mohrs, Klaus; Raddatz, Siegfried; Fruchtmann, Romanis; Kohlsdorfer, Christian; Muller-Peddinghaus, Reiner; and Theisen-Popp, Pia, 5,192,771, Cl. 514-311.000.

Ther, James; Brockett, Brendan L.; and Patterson, John H., to GTE Valenite Corporation. Chip control insert. 5,192,171, Cl. 407-114.000.

Theriault, Robert J.: *See*—
Hochlowski, Jill E.; Buytendorp, Mark H.; Chen, Randal H.; McAlpine, James B.; Theriault, Robert J.; Jackson, Marianna; and Karwowski, James P., 5,192,748, Cl. 514-25.000.

Thomas, Darrell E.; Standley, Donald E.; and Jackson, Leon J. Training apparatus for cattle roping. 5,192,210, Cl. 434-247.000.

Thomas, E. B.: *See*—
Rose, James L., 5,191,740, Cl. 51-429.000.

Thomas, Edward W.: *See*—
Aiken, James W.; Spilman, Charles H.; and Thomas, Edward W., 5,192,798, Cl. 514-462.000.

Thomas, J. Donaldson: *See*—
Austin, Dennis K.; and Thomas, J. Donaldson, 5,192,828, Cl. 102-275.120.

Thomas, Michel; Blandiaux, Genevieve; and Valange, Baudouin, to Colgate-Palmolive Company. Safe acidic hard surface cleaner. 5,192,460, Cl. 252-142.000.

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Franaszek, Peter A.; Robinson, John T.; and Thomasian, Alexander, 5,193,188, Cl. 395-650.000.

Thompson, E. Earle; and DeMond, Thomas W., to Texas Instruments Incorporated. Digitized color video display system. 5,192,946, Cl. 340-794.000.

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Dimmick, Roger F.; Kleve, Vernon J.; Meyer, Timothy L.; Thompson, Gary A.; and Westphal, Gordon W., 5,193,050, Cl. 361-384.000.

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Treiber, Laszlo R.; Colwell, Lawrence F., Jr.; Arison, Byron H.; Dezeny, Georgette; Lingham, Russell B.; Thompson, Wayne J.; and Balani, Suresh K., 5,192,668, Cl. 435-41.000.

Thomson Consumer Electronics: *See*—
Kerdranvrat, Michel, 5,193,001, Cl. 358-105.000.

Thomson, Paul G.: *See*—
Hasson, Harrith M.; Pingleton, Edward D.; and Thomson, Paul G., 5,192,299, Cl. 606-206.000.

Thor, Karl B., to Eli Lilly and Company. Use of competitive NMDA receptor antagonists in the treatment of urinary incontinence. 5,192,751, Cl. 514-82.000.

Thorn Bacon, Andre E.: *See*—
House, Ronald J., 5,192,344, Cl. 55-216.000.

Thorn Bacon, Sydney J.: *See*—
House, Ronald J., 5,192,344, Cl. 55-216.000.

Thorn EMI plc: *See*—
Shanks, Ian A., 5,193,015, Cl. 359-53.000.

Thorn, Howard R. Device for dressing a lawn. 5,191,944, Cl. 172-445.100.

Thrush, Roger L.: *See*—
Billman, Timothy B.; and Thrush, Roger L., 5,192,220, Cl. 439-327.000.

Tiab, Djebbar; Marschall, David M.; and Altunbay, Mehmet H., to Western Atlas International Inc. Method for identifying and characterizing hydraulic units of saturated porous media: tri-kappa zoning process. 5,193,059, Cl. 364-422.000.

Ticon, Inc.: *See*—
Williams, Robert O., 5,192,039, Cl. 248-62.000.

Tidemark Corporation: *See*—
Chung, T. Mark; Orchard, Anthony G.; Baker, William H.; and Bradford, Charles L., 5,192,141, Cl. 400-56.000.

Tiley, Edward P.: *See*—
Ramsay, Michael V. J.; Tiley, Edward P.; and Sutherland, Derek R., 5,192,777, Cl. 514-333.000.

Ting, Albert C., to Allergan, Inc. Ocular device. 5,192,316, Cl. 623-5.000.

Tinkler, Robert W., to Consolidated Rail Corporation. Modular structure for converting rail cars for carrying both coiled and plate materials directly on longitudinal rails and cross members. 5,191,842, Cl. 105-355.000.

Tinnes, Bernhard, to Metacon AG. Device for slag-free pouring with continuous casting machines. 5,191,926, Cl. 164-437.000.

Tinti, Maria O.: *See*—
Giannessi, Fabio; Ghirardi, Orlando; Misiti, Domenico; Tinti, Maria O.; and Cozzolino, Roberto, 5,192,759, Cl. 514-212.000.

Tobin, Jill M.: *See*—
Hayes, Gary B.; Kittrell, Carter; Prince, Martin R.; Tobin, Jill M.; and Feld, Michael S., 5,192,278, Cl. 606-15.000.

Toda, Kazuyuki: *See*—
Miyakawa, Naoomi; Toda, Kazuyuki; Nakamura, Yukiyasu; Tashiro, Minoru; Yamaoka, Yoshihisa; and Kuwayama, Isao, 5,192,848, Cl. 219-121.820.

Todd, Thomas; and Skinner, Todd B., to Toddco General, Inc. Robotic tool adaptor apparatus. 5,192,844, Cl. 219-85.160.

Toddco General, Inc.: *See*—
Todd, Thomas; and Skinner, Todd B., 5,192,844, Cl. 219-85.160.

Todescat, Marcio L.: *See*—
Lilie, Dietmar E. B.; Driessen, Jose L.; Todescat, Marcio L.; and Krueger, Manfred, 5,192,200, Cl. 417-566.000.

Toensing, Eyvand E., to Seagate Technology Inc. Combination for removably supporting a magnetic transducer carrying arm. 5,191,705, Cl. 29-764.000.

Toji, Shigeo: *See*—
Suzuki, Noboru; and Toji, Shigeo, 5,192,965, Cl. 354-400.000.

Tokumitsu, Jun; Yoshii, Minoru; Suda, Shigeyuki; and Sekine, Masayoshi, to Canon Kabushiki Kaisha. In-focus detecting device. 5,192,998, Cl. 358-41.000.

Tokura, Nobufumi, to Matsushita Electric Industrial Co., Ltd. Apparatus for and method of checking external appearance of soldering state. 5,192,983, Cl. 356-376.000.

Tokyo Electric Co., Ltd.: *See*—
Saito, Akihiro, 5,192,067, Cl. 271-10.000.

Tokyo Electron Limited: *See*—
Shibata, Junichirou, 5,192,908, Cl. 324-158.00F.

Tollet, Daniel: *See*—
Labrucherie, Mark; and Tollet, Daniel, 5,191,849, Cl. 114-61.000.

Tolocko, Gary, to Giddings & Lewis, Inc. Automatic framing system. 5,191,958, Cl. 198-346.200.

Tomaszewski, Lillie C.; and Crain, James R., to Enthone-OMI, Inc. Aqueous degreasing solution having high free alkalinity. 5,192,461, Cl. 252-156.000.

Tombor, Janos: *See*—
Fekete, Pal; Bezzegh, Denes; Zukovics neSte, Katalin, ml/u/megh; Jambor neHoffmann, Zsuzsanna; and Tombor, Janos, 5,192,552, Cl. 424-4.950.

Tomino, Ikuo; Ishiguro, Masaharu; Kitahara, Takumi; Yokoyama, Keiichi; Kihara, Noriaki; Kamiya, Joji; Yoshihara, Kanji; Ishii, Masaaki; Mizuchi, Akira; Horikomi, Kazutoshi; Awaya, Akira; and Nakano, Takuo, to Mitsui Petrochemical Industries, Ltd. Coumaran group containing amine compounds and their acid addition salts and quaternary ammonium salts and the use thereof as anti arrhythmic agents and as psychotropic agents. 5,192,799, Cl. 514-469.000.

Tomiser, Frank, Jr.: *See*—
Metzger, James L., Jr.; and Tomiser, Frank, Jr., 5,191,821, Cl. 83-425.000.

Tomita, Hiroshi, to Geo Search Co., Ltd. Pavement structure examination vehicle. 5,192,953, Cl. 342-22.000.

Tomita, Masahiro: *See*—
Osakabe, Nobuyuki; Endo, Junji; Tonomura, Akira; Tomita, Masahiro; and Furutsu, Tadao, 5,192,867, Cl. 250-311.000.

Tomita, Shigeru, to Kabushiki Kaisha Toshiba. Channel selecting apparatus having a channel skip function. 5,193,005, Cl. 358-191.100.

Tomita, Takaaki: *See*—
Niahiwaki, Seiji; Taketomi, Yoshinao; Uchida, Shinji; Tomita, Takaaki; and Asada, Junichi, 5,193,130, Cl. 385-14.000.

Tomiyama, Takeshi; Endo, Masahiro; Hashimoto, Sadaaki; and Maeda, Kenji, to Kansai Paint Co., Ltd. Patterned film forming laminated sheet. 5,192,611, Cl. 428-354.000.

Tomoda, Akihiro: *See*—
Yokoyama, Minoru; Awai, Takashi; Tomoda, Akihiro; Ishida, Yasushi; Terajima, Hisao; Ono, Takeshi; Yoshida, Takehiro; Wada, Satoshi; and Kobayashi, Makoto, 5,193,007, Cl. 358-296.000.

Tomomatsu, Hideo: *See*—
Ando, Masahiko; Hayabuchi, Masahiro; Tsukamoto, Kazumasa; Tomomatsu, Hideo; Hojo, Yasuo; and Iwatsuki, Kunihiro, 5,191,814, Cl. 74-866.000.

Tomosada, Masahiro: *See*—
Smimizu, Katsuichi; Sawamura, Osamu; Masuda, Shunichi; Tomosada, Masahiro; and Sakamaki, Hisashi, 5,192,971, Cl. 355-206.000.

Toner, James K.: *See*—
Eaton, Donald E.; Toner, James K.; and Wooster, Daniel J., 5,191,910, Cl. 137-2.000.

Tong, Hsu C. Bean sifting device. 5,191,982, Cl. 209-155.000.

Tonomura, Akira: *See*—
Osakabe, Nobuyuki; Endo, Junji; Tonomura, Akira; Tomita, Masahiro; and Furutsu, Tadao, 5,192,867, Cl. 250-311.000.

Tontini, Franco; and Sancisi, Carlo. Multiple loudspeaker. 5,193,119, Cl. 381-182.000.

Torgerson, James F.: *See*—
Bordsen, Donald T.; Cooper, Thomas P.; Esson, Robert F.; Hill, Michael J.; Jordan, John R.; Kessler, James E.; Konrad, Dennis R.; Sipple, Ralph E.; Swenson, Robert E.; Torgerson, James F.; and vonArx, Anthony P., 5,193,162, Cl. 395-425.000.

Torielli, Robert J., to PIM Corporation. Trenchless replacement of conduits in an underground conduit bank. 5,192,165, Cl. 405-156.000.

Torii, Katsutoshi: *See*—
Hanada, Kazuyuki; Misaizu, Iwao; Saito, Masashi; Torii, Katsutoshi; and Kuriyama, Katsumi, 5,192,736, Cl. 503-226.000.

Torii, Nozomu: *See*—
Fukumoto, Ryoichi; Hayakawa, Shigeru; and Torii, Nozomu, 5,192,103, Cl. 292-216.000.

Toriyama, Yoshimi: *See*—
Inagaki, Akira; Kurokawa, Masao; Hasegawa, Hiroyuki; Ishibashi, Toshihiro; Hadano, Hiroaki; Hioki, Takeshi; Toriyama, Yoshimi; Fujita, Kazuo; Takeshima, Yasushi; Wakatsuki, Teruyuki; and Horiuchi, Yasushi, 5,191,778, Cl. 72-13.000.

Torrington Company, The: *See*—
Faye, Bradley D.; Hilby, James A.; Alff, Denis; and Hajzler, Christian, 5,192,138, Cl. 384-448.000.

Tosa, Masahiro; and Yoshihara, Kazuhiro, to National Research Institute For Metals. Method of sputtering a mixture of hexagonal boron nitride and stainless steel onto a steel vessel and heating the film so as to precipitate the boron nitride onto the film surface. 5,192,409, Cl. 204-192.160.

Tosdale, Thomas M., to Ford Motor Company. Throttle control system for automotive vehicle. 5,191,866, Cl. 123-400.000.

Toshiba Kikai Kabushiki Kaisha: *See*—
Kubota, Shoko; and Yamada, Sadayoshi, 5,191,929, Cl. 164-500.000.

Toshiba Lighting & Technology Corporation: *See*—
Matsuura, Atsuhi; Inukai, Shinji; and Sano, Hisanori, 5,192,891, Cl. 313-25.000.

Toth, Andrea: *See*—
Szekely, Istvan; Szego, Andras; Pap, Laszlo; Nagy, Lajos; Kollarik nee Hasek, Viktoria; Marmarosi nee Kellner, Katalin; Karadi, Zoltan; Toth, Andrea; and Szucsany, Gyorgy, 5,192,793, Cl. 514-421.000.

Tourtellott, John A.: *See*—
Gamache, Ronald W.; and Tourtellott, John A., 5,193,120, Cl. 382-1.000.

Towe, Carey A.: *See*—
Dam, Chuong Q.; Hester, Virgil R.; Kelley, Kurtis C.; and Towe, Carey A., 5,191,687, Cl. 29-25.350.

Toyo Boseki Kabushiki Kaisha: *See*—
Oshima, Tairo; Sakashita, Hitoshi; Matsumoto, Hakuji; and Makekawa, Yoshihiko, 5,192,674, Cl. 435-194.000.

Toyo Ink Mfg. Co., Ltd.: *See*—
Matsuki, Hiroshi, 5,193,126, Cl. 382-44.000.

Toyo Seikan Kaisha, Ltd.: *See*—
Imazu, Katsuhiro; Sato, Kazuhiro; Ito, Takurou; Kaneko, Shunji; and See, Toshio, 5,191,779, Cl. 72-46.000.
Takenouchi, Ken; Kurosawa, Kazuyuki; Horiguchi, Makoto; Imatani, Tsuneo; and Kurashima, Hideo, 5,193,014, Cl. 359-3.000.

Toyooka, Takehiro: *See*—
Shiozaki, Iwane; Toyooka, Takehiro; and Iida, Shigeki, 5,193,020, Cl. 359-73.000.

Toyota, Akinori: *See*—
Kioka, Mamoru; Kawakita, Kazumitsu; and Toyota, Akinori, 5,192,731, Cl. 502-110.000.

Toyota Jidosha Kabushiki Kaisha: *See*—
Ando, Masahiko; Hayabuchi, Masahiro; Tsukamoto, Kazumasa; Tomomatsu, Hideo; Hojo, Yasuo; and Iwatsuki, Kunihiro, 5,191,814, Cl. 74-866.000.
Kondo, Norihiko; Tsuzuki, Mikio; and Miura, Yoshinori, 5,191,739, Cl. 51-287.000.
Yamada, Yukifumi; and Akizuki, Kenichiro, 5,192,045, Cl. 248-430.000.
Yuuki, Kiyoshi, 5,191,763, Cl. 60-284.000.

Traugott, J. Mortimer: *See*—
Pariot, Robert; and Traugott, J. Mortimer, 5,192,381, Cl. 156-79.000.

Treddenick, George A. Firefighter safety badge. 5,192,500, Cl. 422-56.000.

Tredway, William K., to United Technologies Corporation. Method of making discontinuous carbon fiber reinforced glass matrix composites with secondary matrix reinforcement. 5,192,475, Cl. 264-115.000.

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Pindeis, Gunter; Nitsch, Wilhelm; Rauh, Hans-Juergen; Zahn, Wolfgang; Treiber, Helmut; and Schindler, Hans-Georg, 5,192,970, Cl. 355-41.000.

Treiber, Laszlo R.; Colwell, Lawrence F., Jr.; Arison, Byron H.; Dezeny, Georgette; Lingham, Russell B.; Thompson, Wayne J.; and Balani, Suresh K., to Merck & Co., Inc. Synthesis of protease inhibitor. 5,192,668, Cl. 435-41.000.

Trend Products Inc.: *See*—
Fox, Robert E., 5,191,718, Cl. 33-526.000.

Trentelman, Jackson P., to Corning Incorporated. Method for press molding near net-shape glass articles. 5,192,353, Cl. 65-66.000.

Tri-Continent Scientific, Inc.: *See*—
Roach, William J., 5,192,511, Cl. 422-100.000.

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Dufour, William T., 5,192,035, Cl. 242-107.40R.

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Tsay, Shih C. Tubular stuffing apparatus. 5,191,832, Cl. 99-450.600.

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Hepp, Phillip; Tschopp, Werner H.; Rindlisbacher, Martin; and Schett, Oskar, 5,192,910, Cl. 324-315.000.

Tseng, Horng-Huei, to Industrial Technology Research Institute. Self-aligned cylindrical stacked capacitor DRAM cell. 5,192,702, Cl. 437-47.000.

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Rand, Roy E.; and Tsiang, Eugene Y., 5,193,105, Cl. 378-137.000.

Tsubaki, Kazunori: *See*—
Shiokawa, Youichi; Okumura, Kazuo; Take, Kazuhiko; and Tsubaki, Kazunori, 5,192,779, Cl. 514-346.000.

Tsubota, Masashi, to NEC Corporation. Address translation system with register storing section and area numbers. 5,193,160, Cl. 395-400.000.

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Tsuchigane, Shigeo: *See*—
Aoki, Yasushi; Azuma, Masaaki; Tsuchigane, Shigeo; Tanaka, Akihiro; Hirayama, Katsuzo; and Tanaka, Eiichiro, 5,191,685, Cl. 24-656.000.

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Nishida, Masami; Izawa, Masataka; and Tsuchiya, Kunimoto, 5,192,962, Cl. 353-98.000.

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Tsukahara, Jiro; and Kobayashi, Hidetoshi, to Fuji Photo Film Co. Ltd. Silver halide color photographic photosensitive materials containing at least two types of cyan dye forming couplers. 5,192,651, Cl. 430-549.000.

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Tsukamoto, Kenkichi, to Costarica Sogo Kaihatsu Co., Ltd. Filter cigarette having filter containing absorptive synthetic graft polymer fibers produced from irradiated polyethylene reacted with vapor phase styrene or absorptive synthetic magnetic fibers. 5,191,905, Cl. 131-332.000.

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Tsuzuki, Mikio: *See*—
Kondo, Norihiko; Tsuzuki, Mikio; and Miura, Yoshinori, 5,191,739, Cl. 51-287.000.

Tuason, Domingo C., Jr.: *See*—
McGinley, Emanuel J.; and Tuason, Domingo C., Jr., 5,192,569, Cl. 426-96.000.

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Konishi, Masami; Narazaki, Hiroshi; Iwatani, Toshiharu; Nose, Kazuo; Sato, Takashi; Oshima, Hiroo; Kitagawa, Soichi; and Tubono, Hazime, 5,193,066, Cl. 364-472.000.

Tumenbatur, Ihsan: *See*—
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Spink, Donald R., 5,192,517, Cl. 423-243.080.

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Turner, Raymond L., to Hughes Aircraft Company. Water-soluble flux for cored solder. 5,192,360, Cl. 75-303.000.

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Drexel, Charles F.; and Blair, Richard F., 5,191,793, Cl. 73-204.220.

Tymes, LaRoy. System for converting a received modulated light into both power for the system and image data displayed by the system. 5,193,201, Cl. 395-800.000.

UCAR Carbon Technology Corporation: *See*—
Mercuri, Robert A.; Ohneth, Edwin J.; and Lewis, Richard T., 5,192,605, Cl. 428-224.000.

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Nishiwaki, Seiji; Taketomi, Yoshinao; Uchida, Shinji; Tomita, Takaaki; and Asada, Junichi, 5,193,130, Cl. 385-14.000.

Uchiyama, Kunio: *See*—
Hatano, Susumu; Oishi, Kanji; Kikuchi, Takashi; Saigou, Yasuhiko; Fukuta, Hiroshi; Uchiyama, Kunio; Aoki, Hirokazu; and Nishii, Osamu, 5,193,075, Cl. 365-233.000.

Ueda, Ikuo: *See*—
Shinozaki, Katsuo; Ishii, Katsuyuki; and Ueda, Ikuo, 5,192,774, Cl. 514-315.000.

Ueda, Kouzou: *See*—
Murata, Masaichi; Kuriyama, Hiroaki; Maeda, Yoshiyuki; Yamashita, Megumi; and Ueda, Kouzou, 5,192,189, Cl. 414-477.000.

Ueda, Noriyoshi: *See*—
Kitajima, Tadayuki; Naito, Masataka; Ueda, Noriyoshi; Hirai, Katsuaki; Honjo, Takeshi; Morishige, Yuji; and Yoshida, Akimaro, 5,192,976, Cl. 355-309.000.

Ueda, Shinji: *See*—
Nishikawa, Toshihiro; Ueda, Shinji; and Usui, Hideo, 5,192,656, Cl. 430-627.000.

Ueha, Sadayuki: *See*—
Takizawa, Hiroyuki; Kawai, Sumio; and Ueha, Sadayuki, 5,191,688, Cl. 29-25.350.

Uehara, Hidetoshi: *See*—
Miyamoto, Sanpei; and Uehara, Hidetoshi, 5,192,878, Cl. 307-362.000.

Ueki, Taro: *See*—
Soneda, Hideo; Yamashita, Junichi; Fukasawa, Yukihisa; Ueki, Taro; and Izutsu, Sadayuki, 5,192,496, Cl. 376-428.000.

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Uemura, Seiichi; Sohda, Yoshio; Kato, Osamu; Kouno, Takefumi; and Kihara, Tsutomu, to Nippon Oil Company, Limited. Process for preparing carbon/carbon composite. 5,192,471, Cl. 264-29.500.

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Ueno, Shuichi: *See*—
Araki, Nobuo; Kagami, Takeji; Chatani, Yoji; Kikuta, Shunichi; Yamada, Iwao; Kamada, Masao; Hashimoto, Seiji; Ueno, Shuichi; Fukui, Takeshi; Nakamura, Takumi; Mizuhashi, Nobuo; and Ishikawa, Yasushi, 5,192,016, Cl. 228-147.000.

Uesako, Takuji: *See*—
Takaishi, Yoshihisa; Goto, Kiyoto; Uesako, Takuji; Kuwahara, Toshiko; Takai, Masaaki; Ono, Yukihisa; Taniguchi, Yoshihiro; Manabe, Sachiko; and Asakuni, Takahiro, 5,192,817, Cl. 549-298.000.

Uetsuki, Masaya: *See*—
Konotsune, Shiro; Kikuta, Kazutsune; Uetsuki, Masaya; and Hase, Hiroaki, 5,192,619, Cl. 428-458.000.

Uhr, Hermann; Marhold, Albrecht; Andres, Peter; Erdelen, Christoph; Wachendorff-Neumann, Ulrike; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. Substituted 2-arylpyrroles. 5,192,794, Cl. 514-422.000.

Ukawa, Naohiko; Okino, Susumu; Takashina, Toru; Onizuka, Masakazu; and Inoue, Kenji, to Mitsubishi Jukogyo Kabushiki Kaisha. Method for desulfurizing exhaust smoke. 5,192,518, Cl. 423-244.080.

Uken, William D.; and Link, William T., to Raynet Corporation. Method of coupling light via a coupler on a fiber optic light guide using phase space matching. 5,193,132, Cl. 385-32.000.

Ukima Colour & Chemicals Mfg. Co., Ltd.: *See*—
Hanada, Kazuyuki; Misaizu, Iwao; Saito, Masashi; Torii, Katsutoshi; and Kuriyama, Katsumi, 5,192,736, Cl. 503-226.000.

Ullmann, Gerhard: *See*—
vom Baur, Hans-Karl W., deceased; Dapperheld, Steffen; Kretschmann, Klaus; Lindner, Werner; Rossmeissl, Rudolf; Milluwe, Hans; and Ullmann, Gerhard, 5,192,411, Cl. 204-280.000.

Umetsu, Sachio, to Canon Kabushiki Kaisha. Tape type work conveying method and conveying apparatus. 5,191,693, Cl. 29-429.000.

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Umetsu, Shinjiro: *See*—
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Umina, Leonard J.; and Anselmo, Robert A., to Digital Equipment Corporation. Memory apparatus for multiple processor systems. 5,193,071, Cl. 365-189.010.

Unicover Corporation: *See*—
Helzer, James A.; Hanefeld, David P.; and Hayes, Dwight, 5,191,972, Cl. 206-840.000.

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Reese, Robert J.; and Newkirk, Franklin D., 5,192,002, Cl. 222-108.000.

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Farris, David D.; Reedy, James D.; and Cobb, Raymond L., 5,192,812, Cl. 521-112.000.
Shay, Gregory D., 5,192,592, Cl. 427-358.000.

Unisys Corporation: *See*—
Bordsen, Donald T.; Cooper, Thomas P.; Esson, Robert F.; Hill, Michael J.; Jordan, John R.; Kessler, James E.; Konrad, Dennis R.; Sipple, Ralph E.; Swenson, Robert E.; Torgerson, James F.; and vonArx, Anthony P., 5,193,162, Cl. 395-425.000.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See*—
Alger, Robert M.; and Falzon, Joseph S., deceased, 5,191,713, Cl. 33-366.000.

United States of America
Agriculture: *See*—
Hanson, Gregory J., 5,191,787, Cl. 73-86.000.
Air Force: *See*—
Ourhaan, Tracy R., 5,192,192, Cl. 416-97.00R.
Schuermeyer, Fritz L.; Cook, Paul E.; Martinez, Edgar J.; and Martinez, Marino J., 5,192,698, Cl. 437-40.000.
Army: *See*—
Jasper, Louis J., Jr., 5,192,827, Cl. 89-1.110.
Puckett, Lawrence J., 5,192,830, Cl. 102-457.000.
Energy: *See*—
Alonso, Carol T.; Bender, Donald A.; Bowman, Barry R.; Burnham, Alan K.; Chesnut, Dwayne A.; Comfort, William J., III; Guymon, Lloyd G.; Henning, Carl D.; Pedersen, Knud B.; Sefcik, Joseph A.; Smith, Joseph A.; and Strauch, Mark S., 5,191,940, Cl. 169-69.000.
Meyer, Ross E., 5,192,155, Cl. 403-410.000.
Health and Human Services: *See*—
Dawson, Jacqueline E.; and Rikihisa, Yasuko, 5,192,679, Cl. 435-243.000.
Reed-Gitomer, Berenice Y., 5,192,660, Cl. 435-7.210.
National Aeronautics and Space Administration: *See*—
Heyman, Joseph S., 5,192,450, Cl. 210-748.000.
Pike, James F., 5,192,852, Cl. 219-137.610.
Navy: *See*—
Johnson, Craig E.; and Dendor, Paul F., 5,192,379, Cl. 149-19.400.
Stiffey, Arthur V., 5,192,667, Cl. 435-32.000.

U.S. Philips Corporation: *See*—
Bernsen, Johannes A. C.; and Kashioka, Seiji, 5,193,127, Cl. 382-48.000.
Christiaens, Alois E., 5,193,084, Cl. 369-258.000.

United Technologies Automotive: *See*—
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United Technologies Automotive, Inc.: *See*—
Wrenbeck, Bruce R.; and Parker, David A., 5,192,873, Cl. 307-38.000.

United Technologies Corporation: *See*—
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Tredway, William K., 5,192,475, Cl. 264-115.000.

Universal City Studios, Inc.: *See*—
Barr, Craig K.; and Alexander, Peter N., 5,192,247, Cl. 472-60.000.

Universal Energy Systems, Inc.: *See*—
Wu, Richard L.; and Pronko, Peter P., 5,192,523, Cl. 427-523.000.

Universal Estech: *See*—
Harris, Curtis L., 5,192,029, Cl. 241-27.000.

University of Alberta: *See*—
Lee, Tze-Fun; and Wang, Lawrence C., 5,192,740, Cl. 514-2.000.

University of British Columbia, The: *See*—
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University of California, Regents of the: *See*—
Phan, Cu N.; and Stoller, Marshall L., 5,192,286, Cl. 606-127.000.

University of California Office of Technology Transfer: *See*—
Petroff, Pierre M., 5,192,709, Cl. 437-110.000.

University of Georgia Research: *See*—
Blum, Stephen A.; Goodband, Robert D.; Nelssen, Jim L.; and Newton, G. Larry, 5,192,804, Cl. 514-554.000.

University of Illinois, The Board of Trustees of the: *See*—
Mishra, Pravin K., 5,191,900, Cl. 128-769.000.

University of Melbourne, The: *See*—
Harrison, Gavin B. L.; Dempster, Robert P.; Rickard, Michael D.; Lightowlers, Marshall W.; Heath, David D.; Lawrence, Stephen B.; and O'Hoy, Kim L., 5,192,538, Cl. 424-88.000.

University Of Michigan, The Regents Of The: *See*—
Cartwright, Mont J.; and Nelson, Christine C., 5,192,293, Cl. 606-172.000.

University of North at Chapel Hill: *See*—
Izydore, Robert A.; and Hall, Iris H., 5,192,761, Cl. 514-241.000.

University of Ottawa, The: *See*—
Kavehrad, Mohsen; and Yun, Gang, 5,192,863, Cl. 250-227.240.
Roy, Rene; and Laferriere, Craig A., 5,192,661, Cl. 435-7.230.

Unix Corporation Ltd.: *See*—
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UOP: *See*—
Bedard, Robert L.; and Flanigen, Edith M., 5,192,722, Cl. 501-128.000.
Holmgren, Jennifer S., 5,192,725, Cl. 502-61.000.
Holmgren, Jennifer S., 5,192,726, Cl. 502-62.000.
Nair, Vinayan; Best, Donald F.; and Vail, Lawrence D., 5,192,727, Cl. 502-64.000.
Skeels, Gary W.; and Sears, Marilyn R., 5,192,522, Cl. 423-713.000.

Upjohn Company, The: *See*—
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Urata, Kazuo: *See*—
Yamazaki, Shunepi; Urata, Kazuo; Koyama, Itaru; and Hirose, Naoki, 5,192,995, Cl. 257-787.000.

Uratsuji, Kazumi: *See*—
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Urnezis, Philip W.: *See—*
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Uruga, Ken-ichi: *See—*
Yajima, Kiyoshi; Suzuki, Takao; Itoh, Masanori; Okuyama, Hitoshi; Uruga, Ken-ichi; and Hirabayashi, Hisanaga, 5,192,940, Cl. 338-308.000.

Usinor Sacilor: *See—*
Sosin, Laurent, 5,191,925, Cl. 164-428.000.

Usui, Hideo: *See—*
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Usui Kokusai Sangyo Kaisha Ltd.: *See—*
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Utsumi, Minoru: *See—*
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Inoue, Eiichi; Noshiro, Atsumi; and Utsumi, Minoru, 5,192,631, Cl. 430-56.000.

Vail, Lawrence D.: *See—*
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Vaiskauckas, Gary A.: *See—*
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Valange, Baudouin: *See—*
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Vallee, Jean-Marie, to Repetto. Asymmetric ballet shoe and pair of such shoes. 5,191,726, Cl. 36-88.000.

Valyocsik, Ernest W.: *See—*
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Moini, Ahmad; and Valyocsik, Ernest W., 5,192,521, Cl. 423-713.000.

Van, Kazuo: *See—*
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van Berkum, William F.: *See—*
Sandos, David A.; van Berkum, William F.; and Wickham, Gordon, 5,192,242, Cl. 452-136.000.

Van Brocklin, Owen F.; and McGarvey, Glenn W., to Risdon Corporation. Low profile pump. 5,192,006, Cl. 222-321.000.

Vance Products Incorporated: *See—*
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VanDalsem, John H.; and Craft, Roger L., to Vektek, Inc. Swing clamp. 5,192,058, Cl. 269-24.000.

Van den Heuvel, Anthony: *See—*
Crisler, Kenneth J.; Hiben, Bradley M.; and Van den Heuvel, Anthony, 5,193,091, Cl. 370-95.100.

Van Der Marel, Piet; and Mooren, Pieter G., to Akzo N.V. Infectious bursal disease virus production in continuous cell lines. 5,192,539, Cl. 424-89.000.

Vander Vegt, Stanley J.; and Chan, Darrell W., to Hughes Aircraft Company. Link sorted memory. 5,193,207, Cl. 395-800.000.

Vanderwarn, Brian D.: *See—*
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van de Stadt, Ingrid L. M.: *See—*
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Van Dyk, Sino J.: *See—*
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Van Egmond, Kenneth D.: *See—*
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VanHove, James M.: *See—*
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Varian Associates, Inc.: *See—*
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Varta Batterie Aktiengesellschaft: *See—*
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Vartuli, James C.: *See—*
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Vektek, Inc.: *See—*
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Velasco, Daniel J. J.; Robinson, Dennis C.; Copeland, Jeffrey P.; and Fernandez, Ricardo L., to Digital Equipment Corporation. Electromagnetic radiation shield for a video amplifier. 5,192,893, Cl. 315-85.000.

Velasquez, David J.; Hodson, Peter D.; and Calhoun, Clyde D., to Riker Laboratoires, Inc. Device. 5,192,548, Cl. 424-443.000.

Velazquez, Jose: *See—*
Espinoza, Carlos A.; and Velazquez, Jose, 5,193,042, Cl. 361-79.000.

Veltman, Preston L.: *See—*
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Venable, Larry C.: *See—*
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Vergano, Stefano: *See—*
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Verseef, Jan H., to Frink America, Inc. Trip apparatus for moldboard assembly. 5,191,729, Cl. 37-232.000.

Vertex Pharmaceuticals, Inc.: *See—*
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Vetromile, Joseph S.: *See—*
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Vickers, Lisa A.; Zyck, Annette P.; Komora, Donald T.; Kirby, Mary P.; and Bernacchi, Donald B., to Griffith Laboratories Worldwide, Inc. Glossy coated fried and baked foods and method for making. 5,192,567, Cl. 426-92.000.

Vickers, Thomas E.; and Sanger, James A., to Allied-Signal Inc. Compressor or turbine blade manufacture. 5,191,711, Cl. 29-889.210.

Victor Company of Japan, Ltd.: *See—*
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Videocolor: *See—*
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Palmer, Matthew; Starkey, John J.; and Viera, Fernando M., 5,191,888, Cl. 128-657.000.

Vines, Frank L. Hybrid internal combustion/steam engine. 5,191,766, Cl. 60-619.000.

Vinson, Wayne A.: *See—*
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Tanihara, Masao; Yamada, Hideaki; Nakashima, Toshihide; Omura, Yoshiaki; and Takakura, Koichi, 5,192,684, Cl. 435-240.270.
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Aoki, Eiichiro, 5,192,826, Cl. 84-737.000.
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Kunimoto, Toshifumi, 5,192,825, Cl. 84-661.000.
Shibukawa, Takeo, 5,192,824, Cl. 84-615.000.
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Kosugi, Motoki; Matsuoka, Noriyuki; and Takahashi, Toru, 5,192,213, Cl. 439-66.000.
Matsuoka, Noriyuki; and Uratsuji, Kazumi, 5,192,221, Cl. 439-342.000.
Yamakami, Yasuhiro: *See*—
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Yamashita, Junichi: *See*—
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Yamazaki, Eiichi, to Hitachi, Ltd. Video display apparatus for pictures with different aspect ratios. 5,193,006, Cl. 358-242.000.
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Kojima, Hiroshi; Sakata, Keikichi; Watanabe, Seigo; Mitsukuchi, Yukio; Hashimoto, Shuichi; Kato, Choji; Teshigawara, Mikiro; Furuhashi, Ryoichi; Momoi, Shoji; Inoue, Toshihiko; Uemura, Kazuki; and Oshima, Katsushi, 5,191,817, Cl. 82-1.110.
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Hamamoto, Kiyoshi, 5,192,094, Cl. 285-165.000.
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Suzuki, Tetsuaki, 5,192,225, Cl. 439-489.000.
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Rix, David M.; and Yingling, Christine M., 5,192,026, Cl. 239-533.300.
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Yoda, Yukiji: *See*—
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Yokohama Rubber Co., Ltd., The: *See*—
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Yokomakura, Mitsunori: *See*—
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Tokumitsu, Jun; Yoshii, Minoru; Suda, Shigeyuki; and Sekine, Masayoshi, 5,192,998, Cl. 358-41.000.
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Young, Frederick W. Specific gravity metal separator. 5,191,981, Cl. 209-39.000.
Young, Hartley F.; and Nevidal, Josef, to Pandrol Canada Limited. Rail handling apparatus. 5,191,839, Cl. 104-2.000.
Young, Sharon. Facial exercise sensor. 5,192,254, Cl. 482-8.000.
Youssef, Hassan; and Bigay, Yves, to Le Carbone Lorraine. Multi-stud brake fitting. 5,191,955, Cl. 188-251.00A.
Yu, Chung-Hsiung. Roller skate with device for assisting the turning and braking action thereof. 5,192,088, Cl. 280-11.220.
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Komamura, Toshio, 5,192,960, Cl. 351-41.000.
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Yun, Sang-Hyeog, to Samsung Electron Devices Co. Ltd. Attachment structure of a magnetic piece of a deflection yoke. 5,192,935, Cl. 335-211.000.
Yuuki, Kiyoshi, to Toyota Jidosha Kabushiki Kaisha. Device for controlling heating of catalyzer for purifying exhaust gas. 5,191,763, Cl. 60-284.000.
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Pontrelli, Gene J.; and Zafiroglu, Dimitri P., 5,192,600, Cl. 428-102.000.
Zahn, Wolfgang: *See*—
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Zasloff, Michael; Moore, Karen; and Wehrli, Suzanne, to Children's Hospital of Pennsylvania, The. Aminosterol antibiotic. 5,192,756, Cl. 514-182.000.
Zeisky, Andre L.; and Grunfeld, Maurice. Indicia card storage device. 5,192,093, Cl. 281-5.000.
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Zeuschner, Roland: *See*—
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Zezza, Louis J.: *See*—
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Zhao, Yunxin, to Matsushita Electric Industrial Co., Ltd. Training module for estimating mixture gaussian densities for speech-unit models in speech recognition systems. 5,193,142, Cl. 395-2.000.

Zhu, Jianzhong, to Cetac Technologies Inc. Atmospheric pressure afterglow ionization system and method of use, for mass spectrometer sample analysis systems. 5,192,865, Cl. 250-288.000.

Zibell, Steven E.: *See*—
Patel, Mansukh M.; Broderick, Kevin B.; Meyers, Marc A.; Schnell, Philip G.; Song, Joo H.; Yatka, Robert J.; and Zibell, Steven E., 5,192,563, Cl. 426-5.000.

Zillmann, William D.: *See*—
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Zilog, Inc.: *See*—
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Shetty, H. Ravindranath; Ottersberg, Walter H.; Parr, Jack E.; and Crowninshield, Roy D., 5,192,323, Cl. 623-16.000.

Zimmerman, Larry G., to Dart Industries Inc. Condiment shaker. 5,192,005, Cl. 222-148.000.

Zimpro Passavant Environmental Systems, Inc.: *See*—
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Zink, David E.; and Amonett, Daniel K., to Emerson Electric Co. Uni-directional rotation device for a cam-operated timer. 5,193,078, Cl. 368-107.000.

Zipperer, Bernhard; Goetz, Norbert; Buschmann, Ernst; Sproesser, Linhard; Ammermann, Eberhard; and Lorenz, Gisela, to BASF Aktiengesellschaft. 3-substituted pyridines and fungicides containing them. 5,192,767, Cl. 514-277.000.

Zivkov, Catherine: *See*—
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Zoller, Gerhard; and Schindler, Ursula, to Cassella Aktiengesellschaft. 2-(aminoalkyl)pyrrolealdehydes, process for their preparation and their use. 5,192,795, Cl. 548-423.000.

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Fekete, Pal; Bezzegh, Denes; Zukovics neSte, Katalin, ml/u/ megh; Jambor neHoffmann, Zsuzsanna; and Tombor, Janos, 5,192,552, Cl. 424-4.950.

Zun, Hong-Fu. Direction setting device for a stroller. 5,191,674, Cl. 16-35.00R.

Zwern, Arthur L. Vehicular voice storage, playback, and broadcasting device. 5,193,141, Cl. 395-2.000.

Zyck, Annette P.: *See*—
Vickers, Lisa A.; Zyck, Annette P.; Komora, Donald T.; Kirby, Mary P.; and Bernacchi, Donald B., 5,192,567, Cl. 426-92.000.

3D Systems, Inc.: *See*—
Hull, Charles W.; Jacobs, Paul F.; Schmidt, Kris A.; Smalley, Dennis R.; and Vinson, Wayne A., 5,192,559, Cl. 425-89.000.
Smalley, Dennis R.; and Vorgitch, Thomas J., 5,192,469, Cl. 264-22.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 9TH DAY OF MARCH, 1993

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Baer, Thomas M., to Spectra-Physics, Laser Diode Systems, Inc. Miniaturized Q-switched diode pumped solid state laser. Re. 34,192, Cl. 372-10.000.

Brown, Craig J., to Eco-Tec Limited. Process for electroplating metals. Re. 34,191, Cl. 205-96.000.

Carey, Robert J. [Snack bag] *bag for objects such as snacks.* Re. 34,193, Cl. 383-43.000.

Eco-Tec Limited: *See*—
Brown, Craig J., Re. 34,191, Cl. 205-96.000.

Rogers Corporation: *See*—
Rubinstein, Leon, Re. 34,190, Cl. 439-67.000.

Rubinstein, Leon, to Rogers Corporation. Connector arrangement. Re. 34,190, Cl. 439-67.000.

Spectra-Physics, Laser Diode Systems, Inc.: *See*—
Baer, Thomas M., Re. 34,192, Cl. 372-10.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Baker, Hazel O.: *See*—
Eilrich, Mark W.; and Baker, Hazel O., B1 5,029,954, Cl. 359-617.000.

Boyarsky, David; and Vaughan, Robert T., to Denton Vacuum Inc. Apparatus for coating substrate devices. B1 4,733,631, 3-9-93, Cl. 118-719.000.

Denton Vacuum Inc.: *See*—
Boyarsky, David; and Vaughan, Robert T., B1 4,733,631, Cl. 118-719.000.

Eilrich, Mark W.; and Baker, Hazel O., to Wildewood Creative Products. Kaleidoscope. B1 5,029,954, 3-9-93, Cl. 359-617.000.

Instapak Corporation: *See*—
Sperry, Charles R., B1 3,976,230, Cl. 222-146.500.

Medical Products Development, Inc.: *See*—
Quaid, Joel, B1 4,889,744, Cl. 427-2.000.

Quaid, Joel, to Medical Products Development, Inc. Method for making open-cell, silicone-elastomer medical implant. B1 4,889,744, 3-9-93, Cl. 427-2.000.

Sperry, Charles R., to Instapak Corporation. System for dispensing polyurethane and the like. B1 3,976,230, 3-9-93, Cl. 222-146.500.

T pholm, Jan, to Topholm & Westermann Aps. Programmable hearing aid. B1 4,947,432, 3-9-93, Cl. 381-68.200.

Topholm & Westermann Aps: *See*—
T pholm, Jan, B1 4,947,432, Cl. 381-68.200.

Vaughan, Robert T.: *See*—
Boyarsky, David; and Vaughan, Robert T., B1 4,733,631, Cl. 118-719.000.

Wildewood Creative Products: *See*—
Eilrich, Mark W.; and Baker, Hazel O., B1 5,029,954, Cl. 359-617.000.

LIST OF DESIGN PATENTEES

A-Dec, Inc.: *See*—
Nordstrom, Carl G., 333,736, Cl. D6-367.000.

AB Underphone: *See*—
Hagstrand, Olof, 333,840, Cl. D19-76.000.

Adams, Joe L. Portable folding rocker seat. 333,737, 3-9-93, Cl. D6-368.000.

Akdemir, Matthew. Ornamental chain. 333,800, 3-9-93, Cl. D11-12.000.

Albert, Gregory P.; Dubugue, Kenneth J.; Fay, Bruce D.; and Gable, Duane S., to Ingersoll-Rand Company. Angled pneumatic grinder. 333,766, 3-9-93, Cl. D8-62.000.

Ancona, Bruce; and Ancona, Jane, to M. Kamenstein, Inc. Kettle. 333,753, 3-9-93, Cl. D7-321.000.

Ancona, Jane: *See*—
Ancona, Bruce; and Ancona, Jane, 333,753, Cl. D7-321.000.

Aoki, Nobuyuki, to Koto Sangyo Co., Ltd. Clamp. 333,771, 3-9-93, Cl. D8-72.000.

Asano, Eiji; and Iwaki, Yoshiko. Combined blank for a decoration ribbon and string. 333,801, 3-9-93, Cl. D11-184.000.

B & F System, Inc., The: *See*—
Meyer, William E., 333,859, Cl. D22-118.000.

B. Sirius Toys, Inc.: *See*—
Cunningham, Timothy F., 333,790, Cl. D10-2.000.

Balda's Snc: *See*—
Baldassarre, Fabio, 333,828, Cl. D16-133.000.

Baldassarre, Fabio, to Balda's Snc. Binocular. 333,828, 3-9-93, Cl. D16-133.000.

Ban, Yutaka: *See*—
Suzuki, Noriyuki; and Ban, Yutaka, 333,832, Cl. D18-40.000.

Bannon, Paul. Combined smoke detector control unit and smoke detector. 333,796, 3-9-93, Cl. D10-106.000.

Barcus, Robert E. Fishing jig. 333,860, 3-9-93, Cl. D22-126.000.

Beder, Samuel L., to Sportingwood's, Inc. Recipe box. 333,726, 3-9-93, Cl. D3-78.000.

Bisch, Steven C. Handle for a knife blade. 333,774, 3-9-93, Cl. D8-107.000.

Bjorck, Bengt: *See*—
Ohlsson, Ingemar; and Bjorck, Bengt, 333,785, Cl. D9-431.000.

Black & Decker Inc.: *See*—
Price, Scott D., 333,825, Cl. D15-142.000.
Reed, Charles A., Jr.; Krasznai, Charles Z.; Kosten, Richard B.; and Melito, Maurice A., 333,891, Cl. D32-30.000.

Blue Ribbon Pen & Pencil Co., Inc.: *See*—
Schapiro, Samuel H., Jr., 333,773, Cl. D8-102.000.

Bott, John A.: *See*—
Cucheran, John S., 333,808, Cl. D12-157.000.

Bristol-Myers Squibb Company: *See*—
Kobel, Carolyn B., 333,781, Cl. D9-339.000.

Browning-Ferris Industries Inc.: *See*—
Schulze, Curt J.; and Nichols, James M., 333,898, Cl. D34-7.000.

Buck Knives, Inc.: *See*—
Seber, Brett P., 333,728, Cl. D3-102.000.

Caceres, Roberto. Recreational cart. 333,899, 3-9-93, Cl. D34-17.000.

Campbell, Teri R. Combined cup with heating element. 333,756, 3-9-93, Cl. D7-507.000.

Canan Kabushiki Kaisha: *See*—
Isomoto, Masataka; and Sakurai, Mitsuru, 333,834, Cl. D18-48.000.

Canon Kabushiki Kaisha: *See*—
Suzuki, Noriyuki; and Ban, Yutaka, 333,832, Cl. D18-40.000.
Yamamoto, Ei; and Kanamori, Akihito, 333,833, Cl. D18-43.000.

Cantey, Robert L. Baseball pitching aid. 333,856, 3-9-93, Cl. D21-200.000.

Carroll, Michael H. Clip for bags. 333,786, 3-9-93, Cl. D9-435.000.

Carter, Raymond, to Grammer AG. Chair. 333,735, 3-9-93, Cl. D6-366.000.

Cat Eye Co., Ltd.: *See*—
Ueda, Takashi, 333,855, Cl. D21-194.000.

Cetylite Industries, Inc.: *See—*
Wachman, Stanley L., 333,869, Cl. D24-117.000.
Charng, Cedric S. K. Pin latch for a windshield wiper. 333,807, 3-9-93, Cl. D12-155.000.
Charriol, Philippe. Timepiece dial. 333,799, 3-9-93, Cl. D10-126.000.
Chemical Waste Management, Inc.: *See—*
Perugini, Frank, 333,783, Cl. D9-424.000.
Chen, Paul, to Datel Electrocraft Corp. Calculator. 333,831, 3-9-93, Cl. D18-7.000.
Chretien, Philippe, to KWC AG. Water control unit for a hand shower. 333,864, 3-9-93, Cl. D23-238.000.
Chung Cheung, Albert Y.: *See—*
Swanson, Lanette O.; and Chung Cheung, Albert Y., 333,814, Cl. D14-100.000.
Church Chair Industries, Inc.: *See—*
Sammons, John D., 333,733, Cl. D6-334.000.
Clairol, Inc.: *See—*
Magidson, Iris; Wiegner, Thomas F.; and Pereira, Joseph, 333,778, Cl. D9-300.000.
Clement, Clifford. Directional indicating clamp for fire hoses. 333,779, 3-9-93, Cl. D8-395.000.
Cloutier, Hermel R. Winding drum. 333,776, 3-9-93, Cl. D8-358.000.
Coaster Co. of America, Inc.: *See—*
Yeh, Michael, 333,739, Cl. D6-380.000.
Cobbs Manufacturing Company: *See—*
Hartmann, Jerome; Schenken, John; and Haas, Charles A., 333,843, Cl. D19-78.000.
Cole, Douglas L., to Mikron Industries. Window component extrusion. 333,876, 3-9-93, Cl. D25-124.000.
Cole, Douglas L., to Mikron Industries. Window component extrusion. 333,877, 3-9-93, Cl. D25-124.000.
Cole, Douglas L., to Mikron Industries. Window component extrusion. 333,878, 3-9-93, Cl. D25-124.000.
Colett, Anthony W. Neck support cushion for a shampoo basin. 333,884, 3-9-93, Cl. D28-20.000.
Collins, Rita. Plant waterer. 333,763, 3-9-93, Cl. D8-1.000.
Conti, Rino, to Dart Industries Inc. Casserole dish cover. 333,754, 3-9-93, Cl. D7-392.100.
Crook, Gregory M.; and Murphy, Kent W., to Rubbermaid Incorporated. Bathroom accessory support fixture. 333,751, 3-9-93, Cl. D6-524.000.
Cucheran, John S., to Bott, John A. Vehicle luggage carrier side rail. 333,808, 3-9-93, Cl. D12-157.000.
Cunningham, Russell D. Combined tractor trailer lifter and switch therefor. 333,902, 3-9-93, Cl. D34-28.000.
Cunningham, Timothy F., to B. Sirius Toys, Inc. Clock. 333,790, 3-9-93, Cl. D10-2.000.
Danilowicz, Walter A.: *See—*
Sliper, Stephen B.; Danilowicz, Walter A.; and Kang, Soo Y., 333,823, Cl. D14-258.000.
D'Aquila, James P. Combined toilet seat for the physically impaired and toilet seat cover. 333,865, 3-9-93, Cl. D23-311.000.
Dart Industries Inc.: *See—*
Conti, Rino, 333,754, Cl. D7-392.100.
DeCoster, Pieter K. J., 333,757, Cl. D7-550.000.
Lillelund, Stig, 333,758, Cl. D7-612.000.
Zimmerman, Larry G., 333,744, Cl. D6-457.000.
Dataproducts Corporation: *See—*
Kelemen, Louis G.; and Pagella, James B., 333,836, Cl. D18-55.000.
Datel Electrocraft Corp.: *See—*
Chen, Paul, 333,831, Cl. D18-7.000.
Davidson, William G., to Harley-Davidson, Inc. Motorcycle. 333,806, 3-9-93, Cl. D12-110.000.
DeCoster, Pieter K. J., to Dart Industries Inc. Tray. 333,757, 3-9-93, Cl. D7-550.000.
Desjardin, Serge: *See—*
Jones, John S.; and Desjardin, Serge, 333,780, Cl. D9-338.000.
Detmer, William P. Shoe. 333,718, 3-9-93, Cl. D2-264.000.
Diamond, Norman, to General Signal Corporation. Turnstile cover. 333,874, 3-9-93, Cl. D25-51.000.
Dicochea, Jenny. Pancake mold. 333,761, 3-9-93, Cl. D7-675.000.
Dimacopoulos, Theodore. Ski carrier. 333,724, 3-9-93, Cl. D3-36.000.
Doughty, Robert W. Catamaran hydrofoil. 333,811, 3-9-93, Cl. D12-317.000.
Dowler, Margaret A. Pet exerciser treadmill. 333,887, 3-9-93, Cl. D30-160.000.
Dubugue, Kenneth J.: *See—*
Albert, Gregory P.; Dubugue, Kenneth J.; Fay, Bruce D.; and Gable, Duane S., 333,766, Cl. D8-62.000.
Duracraft Corp.: *See—*
Wang, Jui-Shang, 333,866, Cl. D23-335.000.
Ellenberger & Poensgen GmbH: *See—*
Krasser, Fritz, 333,812, Cl. D13-160.000.
Emori, Motohiko, to Kett Electric Laboratory. Coating thickness tester. 333,794, 3-9-93, Cl. D10-70.000.
Encon Industries, Inc.: *See—*
Markwardt, Michael A., 333,867, Cl. D23-377.000.
Enginuity Inc.: *See—*
Henricksen, Douglas A., 333,841, Cl. D19-78.000.
Erich, Thomas W.: *See—*
Latraverse, Paul A.; MacNeill, Harris L.; and Erich, Thomas W., 333,719, Cl. D2-314.000.
Ernst Stadelmann Gesellschaft m.b.H.: *See—*
Kirchner, Balthasar, 333,842, Cl. D19-78.000.
Fay, Bruce D.: *See—*
Albert, Gregory P.; Dubugue, Kenneth J.; Fay, Bruce D.; and Gable, Duane S., 333,766, Cl. D8-62.000.
Fennelly, John; and Kitchell, Nancy. Jalousie shutter. 333,872, 3-9-93, Cl. D25-47.000.
Ferrin, Kenneth M. Hamburger press. 333,759, 3-9-93, Cl. D7-672.000.
Ford Motor Company: *See—*
Sliper, Stephen B.; Danilowicz, Walter A.; and Kang, Soo Y., 333,823, Cl. D14-258.000.
Franklin, Dana, to Samsonite Corporation. Buckle. 333,803, 3-9-93, Cl. D11-218.000.
Franklin, Dana, to Samsonite Corporation. Buckle. 333,804, 3-9-93, Cl. D11-218.000.
Fri-Jado B.V.: *See—*
van Berlo, Adrianus A. J., 333,782, Cl. D7-350.000.
Fuke, Mitsutaka, to Sharp Corporation. Combined radio tuner and tape recorder. 333,820, 3-9-93, Cl. D14-163.000.
FWJ Plastic Packaging, Inc.: *See—*
Jones, John S.; and Desjardin, Serge, 333,780, Cl. D9-338.000.
Gabel, Jerry. Glue dispenser. 333,838, 3-9-93, Cl. D19-66.000.
Gable, Duane S.: *See—*
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Gannett Co., Inc.: *See—*
Nichols, David V.; and Powers, Joel D., 333,844, Cl. D20-6.000.
Gardner, Clara R.: *See—*
Gardner, Jerry N.; and Gardner, Clara R., 333,849, Cl. D21-98.000.
Gardner, Jerry N.; and Gardner, Clara R. Whirling toy. 333,849, 3-9-93, Cl. D21-98.000.
Gaston, James J. Vehicle clearance warning signal. 333,798, 3-9-93, Cl. D10-114.000.
Gehry, Frank O., to Westinghouse Electric Corp. Chair. 333,738, 3-9-93, Cl. D6-369.000.
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Geschwender, Robert C. Dispenser cap. 333,788, 3-9-93, Cl. D9-448.000.
Giangrasso, Joseph A. Machinists V-block. 333,826, 3-9-93, Cl. D15-145.000.
Gillette Company, The: *See—*
Hirst, Kenneth W.; and Petersen, John R., 333,787, Cl. D9-448.000.
Glick, Stephen A.; and Yonkers, E. Hubbard, to New England Yacht Consultants, Ltd. Electric clock case. 333,791, 3-9-93, Cl. D10-15.000.
Goodman, Rudolph A. Container. 333,784, 3-9-93, Cl. D9-424.000.
Graham, David M. Baseball card display board. 333,846, 3-9-93, Cl. D20-40.000.
Grammer AG: *See—*
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Haas, Charles A.: *See—*
Hartmann, Jerome; Schenken, John; and Haas, Charles A., 333,843, Cl. D19-78.000.
Hagstrand, Olof, to AB Underphone. Combined telephone index and writing instrument holder. 333,840, 3-9-93, Cl. D19-76.000.
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Hartmann, Jerome; Schenken, John; and Haas, Charles A., to Cobbs Manufacturing Company. Combined holder for note paper and a writing instrument. 333,843, 3-9-93, Cl. D19-78.000.
Hatfield, Tinker L., to Nike, Inc. Shoe midsole. 333,720, 3-9-93, Cl. D2-314.000.
Hatfield, Tinker L., to Nike, Inc. Shoe upper. 333,721, 3-9-93, Cl. D2-314.000.
Henricksen, Douglas A., to Enginuity Inc. Desk accessory organizer. 333,841, 3-9-93, Cl. D19-78.000.
Herren, Bruno, to Moha Moderne Haushaltwaren A.G. Cheese grater. 333,762, 3-9-93, Cl. D7-678.000.
Hess, Stephen C., to Winston Furniture Company, Inc. Chair frame. 333,750, 3-9-93, Cl. D6-500.000.
Hirota, Ginichi: *See—*
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Hirst, Kenneth W.; and Petersen, John R., to Gillette Company, The. Dispenser for a container. 333,787, 3-9-93, Cl. D9-448.000.
Hitachi Koki Company, Limited: *See—*
Sasaki, Yuichiro; and Yoshimizu, Chikai, 333,767, Cl. D8-69.000.
Hogan, S. David. Belt buckle. 333,805, 3-9-93, Cl. D11-232.000.
Honeywell Inc.: *See—*
Odom, James A., Jr., 333,792, Cl. D10-50.000.
Hoover Company, The: *See—*
Wareham, Richard A., 333,892, Cl. D32-32.000.
Hopp, Ellen T. Belt pack. 333,729, 3-9-93, Cl. D3-106.000.
Huang, Soddy. Adjustable lamp. 333,880, 3-9-93, Cl. D26-65.000.
Hughes, Tom; and Roth, Neil A., to V Band Corporation. Telephone console. 333,822, 3-9-93, Cl. D14-241.000.
Ingersoll-Rand Company: *See—*
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Olsen, Flemming H., 333,851, Cl. D21-108.000.
Olsen, Flemming H., 333,852, Cl. D21-108.000.
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Marotti, Martin J., 333,817, Cl. D14-109.000.
Invernesa Corporation: *See—*
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Ishida, Katsuhiro, to Sharp Corporation. Power unit of sequence controller. 333,813, 3-9-93, Cl. D13-162.000.

Isomoto, Masataka; and Sakurai, Mitsuru, to Canan Kabushiki Kaisha. Sorter for copying machine. 333,834, 3-9-93, Cl. D18-48.000.

Israely, Ilan; and Mirand, Mauricio, to Star Micronics Co., Ltd. Printer. 333,835, 3-9-93, Cl. D18-55.000.

Issa, Darrell E. Transmitter for a vehicle alarm. 333,795, 3-9-93, Cl. D10-106.000.

Iwaki, Yoshiko: *See*—
Asano, Eiji; and Iwaki, Yoshiko, 333,801, Cl. D11-184.000.

Johnson, David H. Combined restaurant check tray and calculator. 333,743, 3-9-93, Cl. D6-449.000.

Johnson, William H., to Shenandoah Manufacturing Co., Inc. Pathalogical waste incinerator for farm use. 333,894, 3-9-93, Cl. D34-1.100.

Jokari/US, Inc.: *See*—
Wilhite, Gerald D., 333,746, Cl. D6-462.000.

Jones, Bruce E.; and Jones, Roland H., Sr. Canopy. 333,875, 3-9-93, Cl. D25-56.000.

Jones, John S.; and Desjardin, Serge, to FWJ Plastic Packaging, Inc. Roll-on applicator. 333,780, 3-9-93, Cl. D9-338.000.

Jones, Roland H., Sr.: *See*—
Jones, Bruce E.; and Jones, Roland H., Sr., 333,875, Cl. D25-56.000.

Jones, Ronald J.: *See*—
Kinnamon, Kevin D.; and Jones, Ronald J., 333,900, Cl. D34-27.000.

Jureckson, Mitchell, to SPS Technologies, Inc. Hex key holder. 333,769, 3-9-93, Cl. D8-71.000.

Jureckson, Mitchell, to SPS Technologies, Inc. Hex key holder. 333,770, 3-9-93, Cl. D8-71.000.

Kabushiki Kaisha Kanemitsu: *See*—
Kanemitsu, Toshiaki; and Oda, Kazuyuki, 333,777, Cl. D8-360.000.

Kamachi, Brian T., to United Commercial Trading Co., Inc. Retractable sign. 333,845, 3-9-93, Cl. D20-21.000.

Kanamori, Akihito: *See*—
Yamamoto, Ei; and Kanamori, Akihito, 333,833, Cl. D18-43.000.

Kanemitsu, Toshiaki; and Oda, Kazuyuki, to Kabushiki Kaisha Kanemitsu. Pulley. 333,777, 3-9-93, Cl. D8-360.000.

Kang, Soo Y.: *See*—
Sliper, Stephen B.; Danilowicz, Walter A.; and Kang, Soo Y., 333,823, Cl. D14-258.000.

Kason Industries, Inc.: *See*—
Katz, David, 333,741, Cl. D6-411.000.

Katz, David, to Kason Industries, Inc. Garment display rack. 333,741, 3-9-93, Cl. D6-411.000.

Kelemen, Louis G.; and Pagella, James B., to Dataproducts Corporation. Printer. 333,836, 3-9-93, Cl. D18-55.000.

Kennedy, Michael. Pet dish with timer. 333,886, 3-9-93, Cl. D30-122.000.

Keranen, Joe A. Artificial fish lure. 333,861, 3-9-93, Cl. D22-129.000.

Kett Electric Laboratory: *See*—
Emori, Motohiko, 333,794, Cl. D10-70.000.

Kimmons, Tonnie. Chemical mixing container for sprinklers. 333,863, 3-9-93, Cl. D23-214.000.

Kinnamon, Kevin D.; and Jones, Ronald J., to Unarco Industries, Inc. Shopping cart bumper. 333,900, 3-9-93, Cl. D34-27.000.

Kirchner, Balthasar, to Ernst Stadelmann Gesellschaft m.b.H. Organizer tray for assorted desk accessories. 333,842, 3-9-93, Cl. D19-78.000.

Kitchell, Nancy: *See*—
Fennelly, John; and Kitchell, Nancy, 333,872, Cl. D25-47.000.

Kiyokane, Jerrilyn C., to Namkung Promotions, Inc. Combined vertically-mountable pencil sharpener and holder. 333,839, 3-9-93, Cl. D19-73.000.

Klein, Rich; and Malik, Vijay S., to Lynk, Inc. Tie rack. 333,731, 3-9-93, Cl. D6-317.000.

Klose, Odo H., to Prasenta KG, Weber & Co. Letter opener. 333,772, 3-9-93, Cl. D8-102.000.

Knudsen, Jens N., to Interlego A.G. Element for a toy building set. 333,853, 3-9-93, Cl. D21-108.000.

Kobel, Carolyn B., to Bristol-Myers Squibb Company. Dispensing carton. 333,781, 3-9-93, Cl. D9-339.000.

Kosten, Richard B.: *See*—
Reed, Charles A., Jr.; Krasznai, Charles Z.; Kosten, Richard B.; and Melito, Maurice A., 333,891, Cl. D32-30.000.

Koto Sangyo Co., Ltd.: *See*—
Aoki, Nobuyuki, 333,771, Cl. D8-72.000.

Krape, Paul E., to Southco, Inc. Flexible draw latch. 333,775, 3-9-93, Cl. D8-342.000.

Krasser, Fritz, to Ellenberger & Poensgen GmbH. Circuit breaker. 333,812, 3-9-93, Cl. D13-160.000.

Krasznai, Charles Z.: *See*—
Reed, Charles A., Jr.; Krasznai, Charles Z.; Kosten, Richard B.; and Melito, Maurice A., 333,891, Cl. D32-30.000.

Kuppermas, Dennis, to RB Toy Development Co. Toy tiger shark. 333,854, 3-9-93, Cl. D21-157.000.

KWC AG: *See*—
Chretien, Philippe, 333,864, Cl. D23-238.000.

Laing, Chen T. Cosmetic case. 333,885, 3-9-93, Cl. D28-76.000.

Lampe, Mark J., to Smith Corona Corporation. Word processor. 333,830, 3-9-93, Cl. D18-1.000.

Latraverse, Paul A.; MacNeill, Harris L.; and Erich, Thomas W., to MacNeill Engineering Company, Inc. Cleat skirt. 333,719, 3-9-93, Cl. D2-314.000.

Leonard, Miranda. Stereo stand. 333,749, 3-9-93, Cl. D6-479.000.

Lever Brothers Company, Division of Conopco, Inc.: *See*—
Reif, Ulrich, 333,789, Cl. D9-563.000.

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CLASS 74

335 5,191,804
459 5,191,805
477 5,191,806
501.6 5,191,807
526 5,191,808
572 5,191,809
5,191,810
574 5,191,811
5,191,812
606 R 5,191,813
866 5,191,814
5,191,815

CLASS 75

10.67 5,192,359
303 5,192,360

CLASS 81

361 5,191,816

CLASS 82

1.11 5,191,817

CLASS 83

27 5,191,818
349 5,191,819
409 5,191,820
425 5,191,821
466 5,191,822
857 5,191,823
874 5,191,824

CLASS 84

236 5,192,820
383 R 5,192,821
422.3 5,192,822
600 5,192,823
615 5,192,824
661 5,192,825
737 5,192,826

CLASS 86

20.15 5,192,819

CLASS 89

1.11 5,192,827

CLASS 91

173 5,191,825
418 5,191,826
433 5,191,827

CLASS 92

165 R 5,191,828

CLASS 99

352 5,191,829
439 5,191,830
446 5,191,831
450.6 5,191,832

CLASS 100

88 5,191,833

CLASS 101

130 5,191,834
148 5,191,835
219 5,191,836
333 5,191,837

CLASS 102

275.12 5,192,828
434 5,192,829
457 5,192,830

CLASS 104

2 5,191,838
5,191,839
17.1 5,191,840

CLASS 105

167 5,191,841
355 5,191,842

CLASS 106

26 R 5,192,361
35 5,192,362
218 5,192,363
287.16 5,192,364
439 5,192,365
724 5,192,366

CLASS 108

56.3 5,191,843

CLASS 110

346 5,191,844
5,191,845
5,191,846

CLASS 112

254 5,191,847

CLASS 114

56 5,191,848
61 5,191,849
91 5,191,850
102 5,191,851
255 5,191,852
291 5,191,853
5,191,854

CLASS 116

280 5,191,855

CLASS 118

46 5,192,367
72 5,192,368
624 5,192,369
719 B1 4,733,631
723 5,192,370
728 5,192,371

CLASS 119

29.5 5,191,856
52.3 5,191,857

CLASS 123

21 5,191,858
41.44 5,191,859
41.74 5,191,860
46 SC 5,191,861
48 B 5,191,862
59 AC 5,191,863
193.2 5,191,864
339 5,191,865
400 5,191,866
446 5,191,867
449 5,191,868
494 5,191,869
520 5,191,870
531 5,191,871
647 5,191,872

CLASS 125

15 5,191,873

CLASS 126

312 5,191,874
512 5,191,877
576 5,191,875
5,191,876

CLASS 128

4 5,191,878
5,191,879
24 AA 5,191,880
205.24 5,191,881
207.11 5,191,882
401 5,191,883
419 D 5,191,884
5,191,885
640 5,191,886
5,191,887
657 5,191,888
662.04 5,191,889
662.06 5,191,890
710 5,191,891
715 5,191,892
721 5,191,893
733 5,191,894
736 5,191,895
742 5,191,896
745 5,191,897
748 5,191,898
756 5,191,899
769 5,191,900
786 5,191,901
844 5,191,902
879 5,191,903

CLASS 131

96 5,191,904
332 5,191,905
365 5,191,906

CLASS 132

107 5,191,907

CLASS 134

76 5,191,908

CLASS 135

93 5,191,909

CLASS 137

2 5,191,910
413 5,191,912
454.2 5,191,913
614.03 5,191,914
625.27 5,191,915

CLASS 138

100 5,191,911
173 5,191,916

CLASS 139

380 5,191,917

CLASS 141

1 5,191,918
2 5,191,919
313 5,191,920

CLASS 144

134 D 5,191,921
286 R 5,191,935

CLASS 148

101 5,192,372
113 5,192,373
272 5,192,374
306 5,192,375
520 5,192,376
551 5,192,377
691 5,192,378

CLASS 149

19.4 5,192,379

CLASS 152

454 5,192,380

CLASS 156

79 5,192,381
137 5,192,382
180 5,192,383
189 5,192,384
250 5,192,385
268 5,192,386
275.5 5,192,387
324 5,192,388
364 5,192,389
425 5,192,390
540 5,192,391
566 5,192,392
610 5,192,393
640 5,192,394
643 5,192,395

CLASS 157

1.17 5,191,934

CLASS 160

124 5,191,922

CLASS 162

19 5,192,396
55 5,192,397

CLASS 164

292 5,191,923
418 5,191,924
428 5,191,925
437 5,191,926
452 5,191,927
466 5,191,928
500 5,191,929

CLASS 165

4 5,191,930

CLASS 166

282 5,191,931
291 5,191,932
297 5,191,933
5,191,936
363 5,191,937
378 5,191,938
379 5,191,939

CLASS 169

69 5,191,940

CLASS 172

224 5,191,941
286 5,191,942
393 5,191,943
445.1 5,191,944
759 5,191,945

CLASS 173

97 5,191,946

CLASS 174

48 5,192,831
52.1 5,192,832
74 R 5,192,833
120 SR 5,192,834
260 5,192,835

CLASS 177

25.18 5,191,947
188 5,191,948
229 5,191,949

CLASS 180

6.3 5,191,950
9.1 5,191,951
9.52 5,191,952
197 5,191,953

CLASS 182

129 5,191,954

CLASS 187

126 5,192,836

CLASS 188

251 A 5,191,955

CLASS 194

317 5,191,956
318 5,191,957

CLASS 198

346.2 5,191,958
365 5,191,959
391 5,191,960
392 5,191,961
415 5,191,962
429 5,191,963
447 5,191,964
460 5,191,965
493 5,191,966
781 5,191,967

CLASS 200

43.11 5,191,968
61.41 5,192,837
61.45 R 5,192,838
5,192,839
83 R 5,192,840
288 5,192,841
296 5,191,969
335 5,191,970
550 5,191,971

CLASS 202

227 5,192,398

CLASS 203

36 5,192,399

CLASS 204

98 5,192,401
130 5,192,402
153.1 5,192,403
153.19 5,192,404
180.1 5,192,405
5,192,406
182.8 5,192,407
5,192,408
192.16 5,192,409
5,192,410
280 5,192,411
299 R 5,192,412
300 R 5,192,413
400 5,192,414
403 5,192,415
409 5,192,416
418 5,192,417

CLASS 205

96 Re.34,191
100 5,192,418
124 5,192,400
244 5,192,419

CLASS 206

15.2 5,191,973
37.6 5,191,974
151 5,191,975
198 5,191,976
309 5,191,977
315.2 5,191,978
459.5 5,191,979
524.4 5,191,980
840 5,191,972

CLASS 208

23 5,192,420
309 5,192,421

CLASS 209

39 5,191,981
155 5,191,982
164 5,192,422
5,192,423

CLASS 210

85 5,192,424
90 5,192,425
117 5,192,426
133 5,192,427
143 5,192,428
170 5,192,429
172 5,192,430
198.1 5,192,431
198.2 5,192,432
5,192,433
227 5,192,434
241 5,192,435
264 5,192,436
321.83 5,192,437
413 5,192,438
485 5,192,439
500.29 5,192,440
603 5,192,441
605 5,192,442
634 5,192,443
635 5,192,444
640 5,192,445
685 5,192,446
697 5,192,447
708 5,192,448
712 5,192,449
748 5,192,450
755 5,192,451
760 5,192,452
761 5,192,453
780 5,192,454
787 5,192,455
791 5,192,456

CLASS 211

40 5,191,983
115 5,191,984
188 5,191,985
189 5,191,986

CLASS 215

1 C 5,191,987

CLASS 219

10.55 F 5,192,842
56.22 5,192,843
85.16 5,192,844
110 5,192,845
121.43 5,192,849
121.6 5,192,847
121.63 5,192,846
121.82 5,192,848
130.21 5,192,850
130.51 5,192,851
137.61 5,192,852
540 5,192,853

CLASS 220

4.24 5,191,988
4.34 5,191,989
88.1 5,191,990
207 5,191,991
214 5,191,992
333 5,191,993
771 5,191,994

CLASS 221

24 5,191,995
64 5,191,996
119 5,191,997
203 5,191,998

CLASS 222

56 5,191,999
59 5,192,000
63 5,192,001
108 5,192,002
129.1 5,192,003
146.1 5,192,004
146.5 B1 3,976,230
148 5,192,005
321 5,192,006
376 5,192,007
391 5,192,008
400.5 5,192,009

CLASS 224

103 5,192,010

CLASS 225

97 5,192,011

CLASS 227

113 5,192,012

CLASS 228

13 5,192,013
34 5,192,014
111 5,192,015
147 5,192,016
179 5,192,018
206 5,192,582

CLASS 229

101 5,192,019

CLASS 235

375 5,192,854
381 5,192,855
462 5,192,856
467 5,192,857
475 5,192,858
481 5,192,859

CLASS 236

46 R 5,192,020

CLASS 237

2 A 5,192,021
2 B 5,192,022

CLASS 239

11 5,192,023
222.21 5,192,024
394 5,192,025
533.3 5,192,026
542 5,192,027

CLASS 241

3 5,192,028
27 5,192,029
101.2 5,192,030
101.7 5,192,031

CLASS 242

35.5 A 5,192,032
58.6 5,192,033
65 5,192,034
107.4 R 5,192,035
268 5,192,036

CLASS 244

46 5,192,037

CLASS 246

220 5,192,038

CLASS 248

62 5,192,039
74.5 5,192,040
104 5,192,041
176 5,192,042
206.2 5,192,043
309.1 5,192,044
430 5,192,045
676 5,192,046
5,192,047

CLASS 250

201.8 5,192,860
214 VT 5,192,861
227.21 5,192,862
227.24 5,192,863
234 5,192,864
288 5,192,865
310 5,192,866
311 5,192,867
374 5,192,868
505.1 5,192,869
574 5,192,870

CLASS 251

129.16 5,192,048
214 5,192,049
295 5,192,050
328 5,192,051

CLASS 252

25 5,192,457
42.7 5,192,458
106 5,192,459
142 5,192,460
156 5,192,461
174.21 5,192,462
570 5,192,463

CLASS 254

30 5,192,052
122 5,192,053

CLASS 256

24 5,192,054
35 5,192,055
65 5,192,056

CLASS 257

13 5,192,985
51 5,192,991
183.1 5,192,987
192 5,192,986
229 5,192,990
315 5,192,872
342 5,192,989
370 5,192,992
400 5,192,993
595 5,192,871
668 5,193,053
766 5,192,994
774 5,192,988
787 5,192,995

CLASS 261

27 5,192,464
97 5,192,465
114.3 5,192,466
122.1 5,192,467

CLASS 264

13 5,192,468
22 5,192,469
5,192,470
29.5 5,192,471
40.1 5,192,472
102 5,192,473
106 5,192,474
115 5,192,475
127 5,192,476
129 5,192,477
139 5,192,478
171 5,192,479
204 5,192,480
246 5,192,481
257 5,192,482
510 5,192,483
555 5,192,484

CLASS 266

80 5,192,485
156 5,192,486
201 5,192,487
208 5,192,488
271 5,192,489

CLASS 267

153 5,192,057

CLASS 269

24 5,192,058
41 5,192,059
147 5,192,060
228 5,192,061
244 5,192,062
257 5,192,063

CLASS 270

52.5 5,192,064
53 5,192,065

CLASS 271

9 5,192,066
10 5,192,067
34 5,192,068
35 5,192,069
90 5,192,070
225 5,192,071

CLASS 273

73 C 5,192,072
77 A 5,192,073
84 R 5,192,074
5,192,075
138 A 5,192,076
155 5,192,077
232 5,192,078
5,192,079
412 5,192,080
422 5,192,081
435 5,192,082

CLASS 277

29 5,192,083
53 5,192,084
81 S 5,192,085

CLASS 279

4.09 5,192,086
71 5,192,087

CLASS 280

11.2 5,192,099
11.22 5,192,088
221 5,192,089
634 5,192,090
644 5,192,091
654 5,192,092
668 5,192,100
704 5,192,101
768.1 5,192,102

CLASS 281

5 5,192,093

CLASS 285

165 5,192,094
332.1 5,192,095

CLASS 292

45 5,192,096
166 5,192,097
207 5,192,098
216 5,192,103

CLASS 293

3 5,192,107

CLASS 294

19.1 5,192,104
5,192,105
99.2 5,192,106

CLASS 296

37.1 5,192,108
84.1 5,192,109
97.8 5,192,110
163 5,192,111
190 5,192,112

CLASS 297

85 5,192,113
304 5,192,114

CLASS 299

31 5,192,115
75 5,192,116

CLASS 301

108.1 5,192,117

CLASS 303

15 5,192,118
22.8 5,192,119
113.2 5,192,120

CLASS 307

38 5,192,873
125 5,192,874
219.1 5,192,875
260 5,192,876
309 5,192,877
362 5,192,878
451 5,192,879
455 5,192,880
468 5,192,881
471 5,192,882
475 5,192,883
520 5,192,884
555 5,192,885
595 5,192,886

CLASS 310

68 C 5,192,887
71 5,192,888
316 5,192,889
323 5,192,890

CLASS 312

212 5,192,121
267 5,192,122
351.7 5,192,123

CLASS 313

25 5,192,891
422 5,192,892

CLASS 315

85 5,192,893
111.21 5,192,894
201 5,192,895
224 5,192,896
308 5,192,897
370 5,192,898

CLASS 318

139 5,192,899
254 5,192,900
430 5,192,901
561 5,192,902
587 5,192,903

CLASS 320

2 5,192,904
23 5,192,905

CLASS 323

284 5,192,906

CLASS 324

158 F 5,192,907
5,192,908
309 5,192,909
315 5,192,910
322 5,192,911
504 5,192,912
537 5,192,913

CLASS 328

72 5,192,914
133 5,192,915
155 5,192,916
162 5,192,917
165 5,192,918

CLASS 330

129 5,192,919
277 5,192,920

CLASS 331

3 5,192,921

CLASS 332

109 5,192,922

CLASS 333

116 5,192,923
175 5,192,924
187 5,192,925
204 5,192,926
5,192,927
219.2 5,192,928

CLASS 335

172 5,192,934
211 5,192,935
281 5,192,936

CLASS 337

104 5,192,937

CLASS 338

5 5,192,938
75 5,192,939
308 5,192,940

CLASS 340

444 5,192,929
477 5,192,930
550 5,192,931
604 5,192,932
621 5,192,933
638 5,192,941
706 5,192,942
709 5,192,943
765 5,192,944
784 5,192,945
794 5,192,946
825.44 5,192,947
855.1 5,192,948

CLASS 341

68 5,192,949
100 5,192,950
133 5,192,951

CLASS 342

22 5,192,952
5,192,953
42 5,192,954
80 5,192,955
204 5,192,956
357 5,192,957

CLASS 346

107 R 5,192,958
140 R 5,192,959

CLASS 351

41 5,192,960

CLASS 353

66 5,192,961
98 5,192,962

CLASS 354

81 5,192,963
202 5,192,964
400 5,192,965
402 5,192,966
410 5,192,968

CLASS 355

22 5,192,969
41 5,192,970
206 5,192,971
208 5,192,972
215 5,192,973
219 5,192,974
235 5,192,975
309 5,192,976
313 5,192,977

CLASS 356

5 5,192,978
28.5 5,192,979
326 5,192,980
334 5,192,981
345 5,192,982
376 5,192,983
433 5,192,984

CLASS 358

21 R 5,192,996
5,192,997
41 5,192,998
85 5,192,999
92 5,193,000
105 5,193,001
133 5,193,002
136 5,193,003
5,193,004
191.1 5,193,005
242 5,193,006
296 5,193,007
298 5,193,008
335 5,193,009
336 5,193,010
455 5,193,011
456 5,193,012
481 5,193,013

CLASS 359

3 5,193,014
53 5,193,015
5,193,016
59 5,193,017
5,193,018
62 5,193,019
73 5,193,020
81 5,193,021
88 5,193,022
245 5,193,023
253 5,193,024
356 5,193,025
516 5,193,026
566 5,193,027
581 5,193,028
604 5,193,029
617 B1 5,029,954
687 5,193,030
800 5,193,031
804 5,193,032

CLASS 360

31 5,193,033
51 5,193,034
5,193,035
78.14 5,193,036
84 5,193,045
97.02 5,193,046
106 5,193,037
113 5,193,038
5,193,039

CLASS 361

13 5,193,041
79 5,193,042
93 5,193,043
104 5,193,044
212 5,193,047
232 5,193,048
379 5,193,049
384 5,193,050
393 5,193,051
395 5,193,052

CLASS 362

61 5,192,124
83.2 5,192,125
184 5,192,126
226 5,192,127
297 5,192,128
346 5,192,129

CLASS 363

72 5,193,054

CLASS 364

406 5,193,055
408 5,193,056
5,193,057
419 5,193,058
422 5,193,059
424.05 5,193,063
424.1 5,193,060
426.02 5,193,061
426.04 5,193,062
454 5,193,064
468 5,193,065
472 5,193,066
483 5,193,067
578 5,193,068
708 5,193,069
724.16 5,193,070

CLASS 365

189.01 5,193,071
222 5,193,072
226 5,193,073
230.03 5,193,074
233 5,193,075
233.5 5,193,076

CLASS 366

161 5,192,130
308 5,192,131

CLASS 367

23 5,193,077

CLASS 368

107 5,193,078

CLASS 369

37 5,193,079
44.26 5,193,081
112 5,193,082
116 5,193,083
244 5,193,080
258 5,193,084
275.2 5,193,085

CLASS 370

16 5,193,086
58.2 5,193,087
60 5,193,088
84 5,193,089
94.1 5,193,090
95.1 5,193,091

CLASS 371

22.4 5,193,092
34 5,193,093
43 5,193,094

CLASS 372

3 5,193,095
10 Re.34,192
13 5,193,096
21 5,193,097
46 5,193,098
107 5,193,099

CLASS 373

112 5,193,100

CLASS 374

166 5,192,132

CLASS 375

1 5,193,101
5,193,102
120 5,193,103

CLASS 376

154 5,192,490
159 5,192,491
203 5,192,492
211 5,192,493
280 5,192,494
417 5,192,495
428 5,192,496

CLASS 378

73 5,193,104
137 5,193,105
163 5,193,106

CLASS 379

21 5,193,107
5,193,108
60 5,193,109
94 5,193,110
106 5,193,111
410 5,193,112
437 5,193,113

CLASS 380

23 5,193,114
46 5,193,115

CLASS 381

68.2 B1 4,947,432
69 5,193,116
71 5,193,117
86 5,193,118
182 5,193,119

CLASS 382

1 5,193,120
7 5,193,121
9 5,193,122
41 5,193,124
5,193,125
44 5,193,126
48 5,193,127

CLASS 383

7 5,192,133
24 5,192,134
43 Re.34,193
63 5,192,135

CLASS 384

123 5,192,136
275 5,192,137
448 5,192,138
476 5,192,139

CLASS 385

3 5,193,128
13 5,193,129
14 5,193,130
5,193,131
32 5,193,132
85 5,193,133
105 5,193,134
117 5,193,135
129 5,193,136
5,193,137

CLASS 388

811 5,193,146

CLASS 392

341 5,193,138
480 5,193,139

CLASS 395

2 5,193,140
5,193,141
5,193,142
51 5,193,143
76 5,193,144
123 5,193,145
145 5,193,147
157 5,193,148
200 5,193,149
5,193,150
5,193,151
5,193,152
250 5,193,153
5,193,154
375 5,193,156
5,193,157
5,193,158
5,193,159
400 5,193,160
5,193,161
425 5,193,162
5,193,163
5,193,164
5,193,165
5,193,166
5,193,167
5,193,168
5,193,169
5,193,170
5,193,171
5,193,172
5,193,173
500 5,193,174
575 5,193,175
5,193,176
5,193,177
5,193,178
5,193,179
5,193,180
5,193,181
600 5,193,182
5,193,183
5,193,184
5,193,185
650 5,193,186
5,193,187
5,193,188
5,193,189
700 5,193,190
5,193,191
5,193,192
725 5,193,193
5,193,194
5,193,195
5,193,196
5,193,197
750 5,193,198
775 5,193,199
800 5,193,200
5,193,201
5,193,202
5,193,203
5,193,204
5,193,205
5,193,206
5,193,207

CLASS 400

26 5,192,140
56 5,192,141
157.2 5,192,148
208 5,192,149
477 5,192,150
579 5,192,151
679 5,192,152

CLASS 401

4 5,192,153
198 5,192,154

CLASS 403

16 5,192,142
24 5,192,143
209 5,192,144
255 5,192,145
322 5,192,147
410 5,192,155

CLASS 404

4 5,192,156
6 5,192,157
11 5,192,158
5,192,159
72 5,192,160

CLASS 405

26 5,192,161
55 5,192,162
128 5,192,163
5,192,164
156 5,192,165
168.1 5,192,166
195.1 5,192,167
258 5,192,168
259.1 5,192,146
5,192,169

CLASS 406

147 5,192,170

CLASS 407

114 5,192,171

CLASS 409

11 5,192,172
84 5,192,173
283 5,192,174
345 5,192,175

CLASS 410

140 5,192,176
151 5,192,187

CLASS 414

217 5,192,188
477 5,192,189
501 5,192,177
523 5,192,178
710 5,192,179
719 5,192,180
795.3 5,192,181

CLASS 415

90 5,192,182
5,192,183
169.1 5,192,184
170.1 5,192,185
177 5,192,186
191 5,192,190

CLASS 416

90 A 5,192,191
97 R 5,192,192
186 R 5,192,193

CLASS 417

9 5,192,194
299 5,192,195
300 5,192,196
322 5,192,197
383 5,192,198
406 5,192,199
566 5,192,200

CLASS 418

38 5,192,201
55.5 5,192,202

CLASS 420

581 5,192,497

CLASS 422

5 5,192,498
46 5,192,499
56 5,192,500
5,192,501
57 5,192,502
5,192,503
64 5,192,504
5,192,505
5,192,506
68.1 5,192,507
70 5,192,508
75 5,192,509
82.05 5,192,510
100 5,192,511
190 5,192,512
305 5,192,513

CLASS 423

210 5,192,514
213.2 5,192,515
235 5,192,516
243.08 5,192,517
244.08 5,192,518
702 5,192,520
713 5,192,519
5,192,521
5,192,522

CLASS 424

1.1 5,192,524
5,192,525
5,192,526
4.95 5,192,552
10 5,192,527
45 5,192,528
49 5,192,529
52 5,192,530
5,192,531
53 5,192,532
54 5,192,533
59 5,192,534
78.04 5,192,535
78.08 5,192,536
85.2 5,192,537
88 5,192,538
89 5,192,539
92 5,192,540
93 D 5,192,541
195.1 5,192,542
401 5,192,544
405 5,192,545
5,192,546
438 5,192,547
443 5,192,548
450 5,192,549
473 5,192,550
489 5,192,551
529 5,192,553

CLASS 425

87 5,192,558
89 5,192,559
175 5,192,560
378.1 5,192,543
504 5,192,554
544 5,192,555
549 5,192,556
589 5,192,557

CLASS 426

3 5,192,561
4 5,192,562
5 5,192,563
19 5,192,564
49 5,192,565
92 5,192,567
94 5,192,568
96 5,192,569
332 5,192,570
433 5,192,571
438 5,192,572
533 5,192,573
549 5,192,574
573 5,192,575
578 5,192,576
602 5,192,577

CLASS 427

2 B1 4,889,744
128 5,192,583
129 5,192,584
172 5,192,585
210 5,192,586
212 5,192,587
247 5,192,588
255.1 5,192,589
304 5,192,590
356 5,192,591
358 5,192,592
421 5,192,593
5,192,594
5,192,595
523 5,192,523
556 5,192,581
571 5,192,579
576 5,192,578
596 5,192,580

CLASS 428

1 5,192,596
33.6 5,192,610
34.5 5,192,597
71 5,192,598
82 5,192,599
89 5,192,566
102 5,192,600
120 5,192,601
179 5,192,602
217 5,192,603
224 5,192,604
5,192,605
284 5,192,606
314.4 5,192,607
319.7 5,192,608
328 5,192,609
354 5,192,611
355 5,192,612
363 5,192,613
402.24 5,192,615
407 5,192,616
411.1 5,192,617
457 5,192,618
458 5,192,619
461 5,192,620
480 5,192,621
551 5,192,622
593 5,192,623
596 5,192,624
668 5,192,625
694 5,192,626

CLASS 429

17 5,192,627
190 5,192,628
197 5,192,629

CLASS 430

11 5,192,630
56 5,192,631
58 5,192,632
59 5,192,633
85 5,192,634
108 5,192,635
109 5,192,636
5,192,637
137 5,192,638
138 5,192,639
169 5,192,640
200 5,192,641
281 5,192,642
296 5,192,643
338 5,192,644
5,192,645
377 5,192,646
448 5,192,647
496 5,192,648
497 5,192,649
546 5,192,550
549 5,192,651
551 5,192,652
569 5,192,653
576 5,192,654
600 5,192,655
627 5,192,656

CLASS 431

2 5,192,203
10 5,192,204
344 5,192,205

CLASS 433

80 5,192,206
223 5,192,207

CLASS 434

2 5,192,208
98 5,192,209
247 5,192,210
296 5,192,211
302 5,192,212

CLASS 435

4 5,192,657
6 5,192,658
5,192,659
7.21 5,192,660
7.23 5,192,661
5,192,662
7.25 5,192,663
18 5,192,665
22 5,192,666
32 5,192,667
41 5,192,668
69.4 5,192,669
79 5,192,664
101 5,192,671
155 5,192,672
160 5,192,673
194 5,192,674
199 5,192,675
5,192,676
220 5,192,677
228 5,192,678
240.27 5,192,683
5,192,684
243 5,192,679
252.1 5,192,685
254 5,192,686
280 5,192,687

CLASS 436

63 5,192,688
69 5,192,689
106 5,192,690
161 5,192,691
165 5,192,692
169 5,192,693
548 5,192,694

CLASS 437

5 5,192,695
27 5,192,696
37 5,192,697
40 5,192,698
41 5,192,699
5,192,700
5,192,701
47 5,192,702
52 5,192,703
5,192,704
57 5,192,705
67 5,192,706
70 5,192,707
81 5,192,680
90 5,192,708
110 5,192,709
129 5,192,710
5,192,711
143 5,192,712
192 5,192,713
195 5,192,714
5,192,715
209 5,192,716
217 5,192,681
219 5,192,682

CLASS 439

66 5,192,213
67 Re.34,190
5,192,214
73 5,192,215
108 5,192,216
211 5,192,217
226 5,192,218
233 5,192,717
321 5,192,219
327 5,192,220
342 5,192,221
347 5,192,222
402 5,192,223
471 5,192,224
489 5,192,225
502 5,192,226
532 5,192,227
567 5,192,228
604 5,192,229
620 5,192,230
5,192,231
660 5,192,232
723 5,192,233
806 5,192,234

CLASS 440

52 5,192,235
88 5,192,236

CLASS 441

76 5,192,237
84 5,192,238

CLASS 445

21 5,192,239
24 5,192,240

CLASS 452

135 5,192,241
136 5,192,242
157 5,192,243

CLASS 454

276 5,192,244

CLASS 455

4.1 5,193,208
34.2 5,193,209
38.1 5,193,210
38.2 5,193,211
38.3 5,193,212
45 5,193,213
54.2 5,193,214
66 5,193,215
67.7 5,193,216
79 5,193,217
80 5,193,218
89 5,193,219
5,193,220
92 5,193,221
102 5,193,222
115 5,193,223

126 5,193,224

CLASS 460

71 5,192,245
72 5,192,246

CLASS 472

60 5,192,247

CLASS 474

140 5,192,248
160 5,192,249
162 5,192,250
206 5,192,251
210 5,192,252
214 5,192,253

CLASS 482

8 5,192,254
54 5,192,255
55 5,192,256
70 5,192,257
71 5,192,258
93 5,192,259

CLASS 483

59 5,192,260

CLASS 493

29 5,192,261
365 5,192,262

CLASS 501

60 5,192,718
88 5,192,719
98 5,192,720
113 5,192,721
128 5,192,722
136 5,192,723

CLASS 502

28 5,192,724
61 5,192,725
62 5,192,726
64 5,192,727
66 5,192,728
104 5,192,729
108 5,192,730
110 5,192,731
126 5,192,732
225 5,192,733
314 5,192,734
417 5,192,735

CLASS 503

226 5,192,736
227 5,192,737
5,192,738

CLASS 504

187 5,192,356
307 5,192,358
315 5,192,357

CLASS 505

1 5,192,739

CLASS 514

2 5,192,740
4 5,192,741
8 5,192,742
5,192,743
5,192,744
9 5,192,745
11 5,192,746
15 5,192,747
25 5,192,748
45 5,192,749
62 5,192,750
82 5,192,751
152 5,192,752
159 5,192,753
170 5,192,754
180 5,192,755
182 5,192,756
185 5,192,757
210 5,192,758
212 5,192,759
217 5,192,760
241 5,192,761
249 5,192,762
252 5,192,763
5,192,764
255 5,192,765
5,192,766
277 5,192,767
293 5,192,768
5,192,769
305 5,192,770
311 5,192,771
315 5,192,772
5,192,773
5,192,774
321 5,192,775
327 5,192,776
333 5,192,777
341 5,192,778
346 5,192,779
357 5,192,780
365 5,192,781
376 5,192,782
383 5,192,783
398 5,192,784
399 5,192,785
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404 5,192,787
410 5,192,788
411 5,192,789
414 5,192,790
418 5,192,791
5,192,792
421 5,192,793
422 5,192,794
449 5,192,796
452 5,192,797
462 5,192,798
469 5,192,799
510 5,192,800
521 5,192,801
535 5,192,802
539 5,192,803
554 5,192,804
556 5,192,805
562 5,192,806
563 5,192,807
654 5,192,808

CLASS 521

40 5,192,809
52 5,192,810
99 5,192,811
112 5,192,812
159 5,192,813
163 5,192,814

CLASS 523

115 5,192,815
463 5,192,816

CLASS 548

423 5,192,795

CLASS 549

298 5,192,817

CLASS 600

14 5,192,263

CLASS 604

4 5,192,264
10 5,192,265
11 5,192,266
22 5,192,267
53 5,192,268
82 5,192,269
116 5,192,270
5,192,271
141 5,192,272
174 5,192,273
180 5,192,274
263 5,192,275
313 5,192,276
360 5,192,277

CLASS 606

15 5,192,278
17 5,192,279
48 5,192,280
59 5,192,281
65 5,192,282
93 5,192,283
114 5,192,284
117 5,192,285
127 5,192,286
139 5,192,287
143 5,192,288
155 5,192,289
159 5,192,290
5,192,291
170 5,192,292
172 5,192,293
184 5,192,294
194 5,192,295
5,192,296
195 5,192,297
205 5,192,298
206 5,192,299
213 5,192,300
5,192,301
5,192,302
232 5,192,303
238 5,192,304
241 5,192,305
243 5,192,306

CLASS 623

1 5,192,307
5,192,308
5,192,310
5,192,311
2 5,192,309
5,192,312
5,192,313
3 5,192,314
4 5,192,315
5 5,192,316
6 5,192,317
5,192,318
5,192,319
12 5,192,320
13 5,192,321
5,192,322
16 5,192,323
5,192,324
5,192,325
17 5,192,326
5,192,327
20 5,192,328
22 5,192,329
5,192,330
23 5,192,331

CLASSIFICATION OF DESIGNS

D2—	264	333,718			333,749	D9—	300	333,778		317	333,811			333,842		47	333,872
	314	333,719		500	333,750		338	333,780	D13—	160	333,812			333,843		51	333,874
		333,720		524	333,751		339	333,781		162	333,813	D20—	6	333,844		56	333,875
		333,721		596	333,752		424	333,783	D14—	100	333,814		21	333,845		124	333,876
	629	333,722	D7—	321	333,753			333,784		106	333,815		40	333,846			333,877
D3—	23	333,723		350	333,782		431	333,785			333,816	D21—	31	333,847			333,878
	36	333,724		392.1	333,754		435	333,786		109	333,817		48	333,848	D26—	28	333,879
	72	333,725		400	333,755		448	333,787		114	333,818		98	333,849		65	333,880
	78	333,726		507	333,756			333,788		162	333,819		108	333,850		99	333,881
		333,727		550	333,757		563	333,789		163	333,820			333,851	D28—	7	333,882
	102	333,728		612	333,758	D10—	2	333,790		168	333,821			333,852		10	333,883
	106	333,729		672	333,759		15	333,791		241	333,822			333,853		20	333,884
D4—	136	333,730			333,760		50	333,792		258	333,823		157	333,854		76	333,885
D6—	317	333,731		675	333,761		69	333,793	D15—	133	333,824		194	333,855	D30—	122	333,886
	328	333,732		678	333,762		70	333,794		142	333,825		200	333,856		160	333,887
	334	333,733	D8—	1	333,763		106	333,795		145	333,826		206	333,857		162	333,888
	358	333,734		57	333,764			333,796		199	333,827		234	333,858	D32—	23	333,889
	366	333,735		61	333,765		114	333,797	D16—	133	333,828	D22—	118	333,859			333,890
	367	333,736		62	333,766			333,798		235	333,829		126	333,860		30	333,891
	368	333,737		69	333,767		126	333,799	D18—	1	333,830		129	333,861		32	333,892
	369	333,738		71	333,768	D11—	12	333,800		7	333,831		136	333,862	D34—	1.1	333,893
	380	333,739			333,769		184	333,801		40	333,832	D23—	214	333,863			333,894
	397	333,740			333,770			333,802		43	333,833		238	333,864		5	333,895
	411	333,741		72	333,771		218	333,803		48	333,834		311	333,865			333,896
	442	333,742		102	333,772			333,804		55	333,835		335	333,866		7	333,897
	449	333,743			333,773		232	333,805			333,836		377	333,867			333,898
	457	333,744		107	333,774	D12—	110	333,806	D19—	46	333,837		412	333,868		17	333,899
	460	333,745		342	333,775		155	333,807		66	333,838	D24—	117	333,869		27	333,900
	462	333,746		358	333,776		157	333,808		73	333,839		169	333,870		28	333,901
	471	333,747		360	333,777		313	333,809		76	333,840		211	333,871			333,902
	479	333,748		395	333,779		314	333,810		78	333,841	D25—	38	333,873			

CLASSIFICATION OF PLANTS

P—	43.2	8,169		54.1	8,170		76	8,171		82.4	8,172		87.12	8,173		8,174

GEOGRAPHICAL INDEX

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PATENTS

01 :	5,191,737	5,192,126	5,192,695	5,192,029	5,191,764	5,191,786
	5,191,766	5,192,128	5,192,709	5,192,257	5,191,852	5,191,809
	5,192,105	5,192,143	5,192,712	5,192,258	5,191,888	5,191,816
	5,192,514	5,192,147	5,192,715	5,192,312	5,191,981	5,191,855
	5,192,536	5,192,156	5,192,743	5,192,439	5,192,092	5,191,860
	5,193,113	5,192,157	5,192,746	5,192,598	5,192,109	5,191,867
	5,193,200	5,192,182	5,192,749	5,192,686	5,192,127	5,191,885
04 :	5,191,694	5,192,197	5,192,770	5,192,886	5,192,162	5,191,900
	5,191,711	5,192,201	5,192,810	5,192,952	5,192,179	5,191,951
	5,192,158	5,192,206	5,192,844	5,193,148	5,192,190	5,191,952
	5,192,483	5,192,207	5,192,899	5,193,176	5,192,192	5,191,966
	5,192,542	5,192,216	5,192,904	5,193,184	5,192,208	5,192,005
	5,192,553	5,192,219	5,192,911	09 : 5,191,751	5,192,298	5,192,038
	5,192,558	5,192,229	5,192,916	5,191,767	5,192,318	5,192,057
	5,192,787	5,192,231	5,192,951	5,191,805	5,192,328	5,192,123
	5,192,875	5,192,247	5,192,955	5,191,984	5,192,467	5,192,232
	5,192,957	5,192,267	5,193,000	5,191,997	5,192,486	5,192,235
	5,193,204	5,192,269	5,193,013	5,192,006	5,192,527	5,192,245
05 :	5,191,664	5,192,271	5,193,025	5,192,047	5,192,588	5,192,246
	5,192,060	5,192,273	5,193,032	5,192,098	5,192,607	5,192,299
	5,192,081	5,192,274	5,193,037	5,192,138	5,192,627	5,192,306
	5,192,122	5,192,286	5,193,038	5,192,150	5,192,919	5,192,398
	5,192,131	5,192,288	5,193,046	5,192,224	5,192,930	5,192,422
06 :	Re.34,192	5,192,290	5,193,052	5,192,233	5,193,026	5,192,447
	5,191,658	5,192,291	5,193,064	5,192,294	5,193,152	5,192,449
	5,191,670	5,192,292	5,193,092	5,192,333	5,193,161	5,192,524
	5,191,671	5,192,293	5,193,094	5,192,389	5,193,170	5,192,561
	5,191,771	5,192,295	5,193,097	5,192,475	5,193,174	5,192,562
	5,191,793	5,192,304	5,193,098	5,192,529	5,193,179	5,192,563
	5,191,794	5,192,314	5,193,105	5,192,764	5,193,216	5,192,567
	5,191,795	5,192,316	5,193,107	5,192,790	13 : 5,191,734	5,192,576
	5,191,830	5,192,317	5,193,109	5,192,796	5,191,881	5,192,591
	5,191,831	5,192,330	5,193,121	5,192,828	5,191,976	5,192,592
	5,191,846	5,192,335	5,193,122	5,192,856	5,191,996	5,192,725
	5,191,853	5,192,356	5,193,125	5,192,901	5,192,000	5,192,726
	5,191,858	5,192,360	5,193,132	5,193,114	5,192,279	5,192,744
	5,191,875	5,192,374	5,193,136	5,193,128	5,192,307	5,192,748
	5,191,897	5,192,384	5,193,141	5,193,213	5,192,571	5,192,782
	5,191,907	5,192,392	5,193,142	5,193,215	5,192,663	5,192,887
	5,191,914	5,192,408	5,193,145	3,976,230	5,192,679	5,192,905
	5,191,940	5,192,414	5,193,164	10 : 5,191,706	5,192,788	5,192,924
	5,191,960	5,192,426	5,193,180	5,192,308	16 : 5,191,823	5,193,054
	5,191,973	5,192,469	5,193,187	5,192,340	5,192,574	5,193,065
	5,191,999	5,192,478	5,193,192	5,192,399	5,192,589	5,193,091
	5,192,004	5,192,511	5,193,193	5,192,580	5,192,703	5,193,101
	5,192,015	5,192,528	5,193,197	5,192,600	5,192,872	5,193,116
	5,192,027	5,192,541	5,193,199	5,192,655	17 : 5,191,672	5,193,133
	5,192,046	5,192,546	5,193,201	5,192,730	5,191,682	5,193,210
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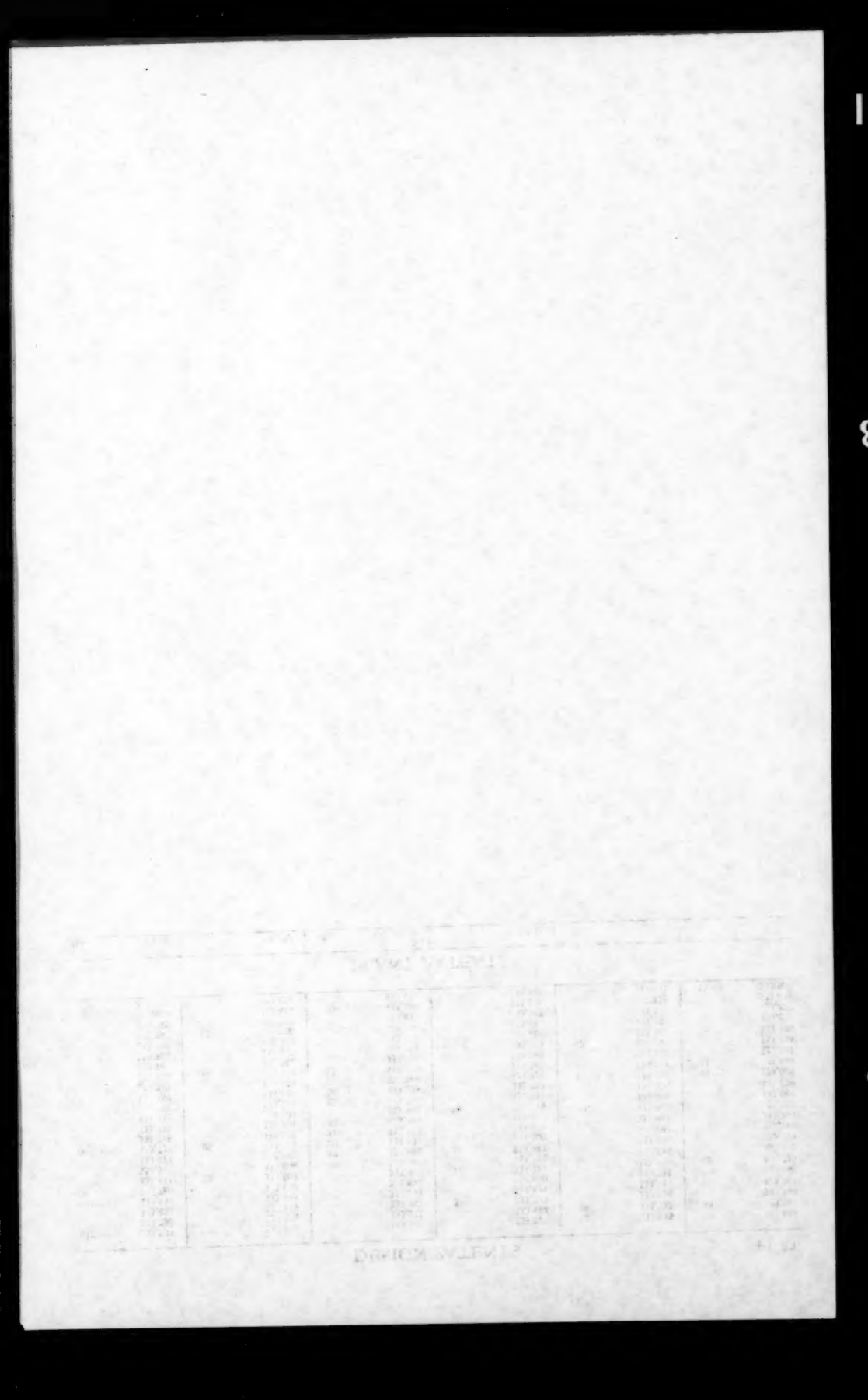

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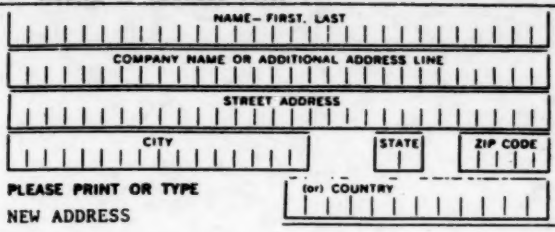

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